Development of behavior

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Paper I

Unit 4

Development Of Human Behaviour

Syllabus Mains: -Growth and development; Principles of development; Role of genetic and environmental factors in determining human behavior. Influence of cultural factors in socialization. Life span development- characteristics, development tasks. Promoting psychological well-being across major stages of life span.

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The concept of childhood began to emerge in the aftermath of the intellectual and religious events of the fifteenth and sixteenth centuries. Both the Renaissance and the Protestant Reformation helped focus attention on the child as an "innocent" who was to be protected from the corrupting influences of the world. Parents were encouraged to watch over their children carefully and to discipline them when necessary, within a short period of time parents began to insulate their children from adult activities. In the United States, by the late nineteenth century, education for children had become compulsory in some states, and a powerful movement to protect children from the hazards of the workplace had begun.

The growing interest in children had its first real impact on psychology in the form of baby biographies. These were detailed accounts of the everyday activities of the biographer's own children. The baby biographies were an important first step in documenting the process of development, which we can define as the changes in cognitive and social abilities that occur throughout life. By the beginning of the twentieth century, the first research center for the study of child development had been established at Yale University. Here, **Arnold Gesell** began to chart norms (average ages) for physical and motor development.

Later, Gesell extended his work into the areas of social and emotional development.

With the tradition of child research firmly established, psychologists turned their attention to a variety of questions. How do children think? What is the nature of parent child relationships? How do children play and interact with their peers? These and other questions became part of a new discipline focusing on the general issue of how behavior changes during the childhood years and how people continue to develop during adolescence and adulthood. Today, psychologists refer to that discipline as the study of life-span development.

An Overview of Development

Human development is both mundane and mysterious. At first glance, it may seem that development is something that simply happens. We grow older and wiser, or so we believe. We notice that our bodies change, our personalities take shape, and our intellects begin to broaden. The whole process seems effortless and inevitable. And yet there is mystery involved. What guides the process of development? At the moment of

conception, we inherit a genetic "blueprint" from our parents. Is this what steers us unwaveringly from infancy to adulthood? Or are we buffeted and molded by our environment by the many and different experiences we encounter during a lifetime?

Perspectives on Development

Three enduring questions confront all students of human development: (I) is development a slow, gradual, and continuous process of change or does it occur abruptly in a series of discontinuous (distinct) stages? (2) Is development relatively stable and unchanging after the first few years of life or is there a great deal of change in later life that cannot be predicted from the early years? (3) Is development governed primarily by genetic influences or does the environment play a central role? In this section, we will examine the different approaches that psychologists have taken in attempting to answer these basic questions.

1. Continuity versus Discontinuity

People change dramatically in the course of a lifetime. Consequently, a major question for psychologists is how to characterize change. Some theorists believe that development is a slow and steady process in which experiences gradually accumulate to produce meaningful change. These psychologists argue, for example, that children learn the facts of addition through a process of drill and repetition that is guided and reinforced by the teacher. Generally speaking, psychologists who adhere to a behaviorist tradition are likely to view development in this fashion. They believe that change occurs in a smooth, gradual, and continuous fashion.

Other theorists believe that change occurs rather suddenly in stage like fashion. Advocates of this position note, for example, those children often do not understand a particular concept (e.g., the mathematical notion of greater than versus less than) for a long period of time despite the best efforts of dedicated teachers. Then, quite suddenly, the child's reasoning powers change and what was formerly a difficult concept becomes simple.

This sudden reorganization of the intellect represents what some theorists call a new stage, that is, a qualitatively different way of understanding the world. We shall see that Jean Piaget, a Swiss psychologist, was a major advocate of this discontinuity position.

2. Stability versus Change

An important question for psychologists is how stable or unchanging are behaviors that first appear in infancy and childhood. Does the infant who talks a blue streak at age two become the gifted public speaker in high school? Did the mean-spirited bully you knew in grade school become an aggressive and antisocial adult? The question here is, do we become grown-up versions of what we once were or do we acquire new characteristics that cannot be predicted from our behavior during childhood?

3. Nature versus Nurture

You are no doubt familiar with a classic problem in psychology: Do we act and feel the way we do because of our biological nature or does our environment shape and nurture us to become who we are? This question has many serious implications. If nature governs development, then it will be relatively difficult for people to change. We would not expect intervention programs, such as special education classes for the mentally retarded or rehabilitation programs for hardened criminals, to have much impact. On the other hand, if life experiences determine our fate, then we can be quite optimistic about the possibility of helping people change by providing everyone with the best possible environment.

Another possibility exists, however. Neither nature not nurture alone may exert such a dominating influence on development.

Rather, it may be more accurate to speak of the interaction between biological (nature) and environmental (nurture) factors. As we shall see, this interactionism position is the preferred, modern-day view of the nature-nurture controversy.

Methods of Studying Development

As we have said, the study of development is the study of how behavior changes over time. Psychologists use two basic research designs to measure these behavioral changes. One method is known as the cross-sectional method the other is referred to as the longitudinal method.

1. The Cross-Sectional Method

In the cross-sectional method, the psychologist observes or tests people of varying ages at approximately the same point in time. By comparing the responses of people in more than one age group, the psychologist can determine whether there are differences in behavior at different ages. Do l0-year-olds, for example, show a different understanding of number concept than 8-year-olds, who may in turn show a different understanding than 6-year-olds? Do young adults have different personal values than adolescents? Do the elderly have different memory capacities than middle-aged adults? One way to answer such questions is to compare the responses of a cross-section of people belonging to each of the relevant age groups.

For example, suppose that we want to learn about the development of children's understanding of basic math facts. To do this, we construct a test of mathematical operations such as addition, subtraction, and simple multiplication. We administer this test to children in three different age groups: lO-year-olds, 8-year-olds, and 6-year-olds. Each group is tested at roughly the same point in time by a different experimenter. In this study we have employed the two essential elements of the cross-sectional method: (a) we have compared the performance of subjects representing different age groups, and (b) we have tested all the subjects at approximately the same point in time.

The cross-sectional method has the advantages of speed and simplicity. In the example above, we can assess quickly the performance of children who are several years apart in age.

We do not have to wait four years until the 6-year-olds reach age 10. But while the cross-sectional method has the advantage of providing prompt results, it also has significant limitations, and, for this reason, psychologists often employ the longitudinal method to answer questions about human development.

2. The Longitudinal Method

The longitudinal method allows psychologistst to measure development by folowing the same group-of subjects over an extended period of time. For example In the-hypothetical Study of math facts, we could select a group of 6-year-olds and test them immediately at age 6, again at age 8, and once more at age 10. Such a study would enable us to assess the changes that occur in children's understanding of math facts, as did the cross-sectional study. The essential features of the longitudinal design are quite different, however.

In a longitudinal study (a) a single group of subjects is assessed and (b) this group is followed for a number of years.

It is obvious that a longitudinal study takes a great deal of time to complete. So why would psychologists ever use such a design?

The reason is that the cross-sectional method has one major limitation. It does not permit psychologists to evaluate how individual children change and develop. For example, suppose we wish to know whether the child who can count and add at age 6 is the same child who is most knowledgeable about subtraction at age 8 and simple multiplication at age 10.

In other words, does knowledge of simple math facts at age 6 predict more sophisticated knowledge at ages 8 and 10? Only a longitudinal study permits us to answer this question.

Thus, if we want to know whether one skill or behavior leads to another, we must use the longitudinal method.

Influences on Development

[*syllabus: Role of genetic and environmental factors in determining human behavior]

Earlier, we noted that two basic factors influence development: heredity and environment. Heredity refers to the genetic "blueprint" that we inherit from our biological parents. Environment is the broad range of experiences that an individual encounters over a lifetime. While each of these factors makes a unique contribution to development, often the two are so closely interwoven that it is difficult to separate their effects. That is why psychologists speak of the interaction between heredity and environment when proposing a comprehensive model of human development.

1. Hereditary Influences

Hereditary influences begin at the moment of conception when we receive millions of genes from each of our parents. Genes, the basic units of hereditary transmission, are interwoven chains of DNA, or deoxyribonucleic acid.
DNA is the substance that directs and controls the complex cellular reactions necessary for life.
Although some relatively simple physical characteristics, such as eye color or hair loss, are under the direct control of one or two genes, other complex psychological characteristics, such as temperament or intelligence, are influenced by many genes. To illustrate how genes work, we will consider first an example of a simple physical characteristic.
Then we will discuss the more complicated question of the genetic influence on intelligence.
In human cells, genes come in pairs. But the two members of the gene pair are not always alike. Occasionally, one gene will be dominant and the other one recessive. A dominant gene is one that controls the expression of a physical trait regardIessoltl1e nature of the other member of the gene pair.

A recessive gene controls the expression of a physical trait only if it is paired with a similar gene. Genes determining eye color, for example show the dominant-recessive pattern. The gene for brown eyes is dominant whereas the gene for blue eyes is recessive.
If two brown-eyed parents each transmit a dominant gene for brown eyes, they will produce a brown-eyed child. However one or both of the parents may also carry a recessive gene for blue eyes. If a child inherits a dominant gene from one parent and a recessive gene from the other, the dominant gene, is still expressed. In this case, the child will have brown eyes. However, two brown-eyed parents could produce a blue-eyed child if each parent carried a recessive gene for blue eyes and the child inherited both recessive genes. A recessive characteristic will be expressed only if the child inherits both recessive genes.

2. The Interaction of Heredity and Environment

We have deliberately chosen a simple example to illustrate how genes work. However, many aspects of development are far more complicated than this. Intelligence and temperament to name but two, are characteristics that are controlled by many different genes. Furthermore, these characteristics are subject to considerable modification by the environment.

When considering complex behavior patterns, it is helpful to make a distinction between genotype and phenotype. At conception we inherit many different genes. This total genetic inheritance is known as the genotype.

It must be distinguished, however, from the phenotype-the physical characteristics and observable behaviors that eventually develop.
For many human characteristics, genes do not establish the precise form (phenotype) of the behaviors that emerge. Rather, they set broad boundaries within which behavior will vary according to the influence of the environment. Put somewhat differently, genes establish a potential range of reaction rather than a fixed pattern of behavior.
Let us take intelligence as an example.

Assume for a moment that we assess the intellectual ability of three children with very different genetic potentials. To do this, we use an intelligence test with scores that range from a low of 50 to a high of 150. Let us assume further that we can vary the environment of each child from one that is very favorable to one that is very unfavorable. When the environmental conditions are similar, child A, who has the greatest genetic potential, always receives the highest test score, followed by child B, and finally by child C. But each child also has a range of possible scores depending on the suitability of the environment. Child A's score, for example, might vary from 100 (average) to 150 (superior) depending on the influence of the environment. On the other hand, someone with a lesser genetic potential, such as child C, will always perform below average. However, this child also has a range of possible scores varying from 50 to 85.

Heredity and environment, then, share an intricate relationship. Genes may predispose an individual toward a range of responses, but the environment will help to determine which behavior patterns actually develop. Furthermore, it is important to note that heredity and environment interact from the moment of conception. Although we often think of the environment in terms of experiences that occurs after birth, the child's prenatal or pre-birth environment also makes an important contribution to development.
Some of the salient features of maturation-learning inter relationship:

a) **Maturation sets limits to development**: Development cannot go beyond a certain point even when learning is encouraged because of limitations in the hereditary endowment of the child.

b) **Maturational limits are rarely reached**: when children reach a temporary plateau in their development, they often conclude that they have reached their limits. As a result they put forth little effort to learn and remain on the plateau instead of advancing to higher levels.

c) **Deprivation of learning opportunities limits development**: when the environment limits opportunities for learning, children will be unable to reach their hereditary potentials.

d) **Stimulation is essential for full development**: for full development of hereditary potentials, , children's innate capacities must be stimulated or encouraged to develop especially at the time they normally develop.

e) **Effectiveness of learning depends on proper timing**: Regardless of how much effort children put into learning they cannot learn until they are developmentally ready for them.

Physical and Perceptual Development

[Syllabus-Life spans development- characteristics and development tasks.]

Physically, humans are unlike other species. Some species, such as birds, are mobile soon after birth. Others, such as guinea pigs, are born with a brain that is almost fully developed. And in many species, the young communicate just as effectively as adults. But humans are different. The human infant is born in a relatively immature state. It takes many months before the infant can walk, still more before he or she is able to talk, and several years before the infant's brain is fully developed.

What this tells us is that in the first few years of life humans undergo tremendous physical changes. At birth, the newborn infant lies immobile. But during the first year, the same infant begins to crawl, then creep, and shortly thereafter walk without support. During this period, neural networks in the brain develop swiftly. The child begins to master language. In just a few short years, a number of remarkable physical changes take place. These changes begin before birth, during the prenatal period, when growth and development occur in rapid and impressive fashion.

Prenatal Development

Prenatal development begins at conception when a sperm from the father fertilizes the mother's ovum and creates a new human cell, known as a zygote. Fertilization occurs in one of two narrow structures called fallopian tubes (see Figure). Following fertilization, the newly formed zygote travels through the fallopian tubes and eventually attaches to the uterine wall. This process takes about 2 weeks. During that time, cell division occurs rapidly with dozens of cells forming even before the zygote is firmly implanted in the uterine wall.

What follows next is the period of the embryo, the term for the developing human organism from the second through the eighth week of prenatal life. Cell division continues to progress rapidly during this period, but now the cells become increasingly specialized, leading eventually to the development of vital structures and organs. For example, though little more than the size of a pin, the human embryo assumes a recognizable form around the third week when an oval-shaped trunk with a discernible head and tail emerge. By the end of the fourth week a primitive heart is beating, and by 8 weeks, many facial features, such as the mouth, eyes, and ears, can be distinguished.

From the third month (9 weeks) after conception until birth the developing human organism is referred to as a Fetus: During this' period, vital organs continue to develop and specialize. Internal organs-the heart, liver, kidneys, and stomach-become ever

more functional. As the fetus grows, the hands, face, feet, and genital organs become more differentiated. In fact, so impressive is the development of the fetus that by the sixth month survival is possible if birth occurs prematurely.

The mother and the fetus are linked by an umbilical cord, which extends from the fetus to a portion of the uterine wall known as the Placenta. The placenta filters the mother's blood before it passes to the fetus and allows nutrients consumed by the mother to reach the growing fetus. Unfortunately, the placenta is not selective. It allows harmful substances ingested by the mother, as well as nutrients, to reach the fetus. If, for example, the mother is a morphine or heroin addict, she may give birth to an addicted infant who will show withdrawal symptoms such as vomiting, trembling, and rapid breathing in the first few days of life (Householder, Hatcher, Burns, & Chasnoff, 1982). Perhaps even more striking are the effects of substances not generally regarded as physiologically addictive, such as cigarettes and alcohol. Studies of maternal smoking during pregnancy have repeatedly shown that expectant mothers who smoke are likely to bear infants whose birth weight is quite low (Joffe, 1969; Meredith, 1975). This finding is significant because low birth weight increases the infant's susceptibility to serious health problems, such as infections of the lungs and circulatory system.

The effects of alcohol consumption during pregnancy are even more dramatic. We now know that frequent and continuous consumption of alcohol during pregnancy will harm the fetus and result in birth defects (Abel, 1980; Stechler & Halton, 1982). Indeed, scientists have identified a particular disorder, known as fetal alcohol syndrome, or FAS, the term. for a group of deformities which appears frequently in the offsprings of alcoholic women. some of the major manifestations of FAS are deformities of the heart, kidneys, face, and fingers (Streissguth, Landesman-Dwyer, Martin, & Smith, 1980).

What is even more startling, however, is the recent evidence suggesting that what was once regarded as moderate, "social drinking," one to two glasses of beer or wine per day, can be problematic during pregnancy. Investigators have found that regular daily consumption of this amount of alcohol may result in some of the physical abnormalities described above, as well as decreased attention and impaired ability to concentrate, lasting well into the preschool years (Abel, 1980; Streissguth, Martin, Barr, Sandman, Kirchner, & Darby, 1984).

Post natal development:

No two humans are exactly alike, but at birth the average infant weighs about 7.5 pounds and is roughly 20 inches long. By the end of infancy, generally defined as the period from until two years of age, the average child weighs approximately 2.5 to 29 pounds and is roughly 33 to 35 inches tall. While these statistics give us some idea of how quickly infants develop, they are somewhat misleading. We must remember that the "average" infant exists only on paper. In reality, infants vary markedly in height and weight and in many other physical characteristics.

How, then, do we determine what is average or normal? How would we know, for example, if a particular infant has fallen far behind his or her peers in physical growth and development? To answer such questions, psychologists are guided by developmental norms. Norms are statistical guidelines that indicate both what is average and how much variation around the average one can expect. For example,- if we know that the average newborn weighs 71/2 pounds and that 90 percent of newborns weigh within 21/2 pounds of the average, then we can conclude that a newborn who weighs less than 5 pounds is quite small.

As infants grow, their motor development improves. Motor development refers to infants' ability to use their arms and legs to move about and explore the environment. At first, motor development proceeds slowly. During the first month of life, infants lie on either their backs or stomachs and are not capable of any significant movement. However, around the fifth or sixth week, most are capable of raising their head to a 45-degree angle when lying on their stomachs. By about 3 months, the majority of infants can roll from a front (stomach) to a back position. At roughly 4 months we can expect to see an infant sit with support; by 6 months most infants can sit alone. Somewhere between 7 and 12 months infants begin to crawl and creep. Finally, between 7 and 15 months they master walking by first pulling themselves to a standing position (around 7 months), then sidestepping while holding on to furniture (around 9 months), then standing alone (around 11 months), and eventually walking without assistance (around 12 months). These milestones of motor development are shown in Figure.

Perceptual Development

In the first few weeks following birth, infants appear to understand little of what is going on around them. They spend time staring at their surroundings, they cry loudly and vigorously, and they sleep. However, in reality, infants display sophisticated perceptual abilities, many of which are present immediately after birth. What they hear (auditory perception) and see (visual perception) is more than a blend of meaningless sounds and shapes.

How do psychologists study perceptual abilities in such young organisms? Because newborns cannot talk or follow directions, they are hardly ideal subjects. But they do display a number of vital responses. Newborns breathe, suck, cry, kick, turn their heads from side to side, and the like. If these behaviors are measured in the context of certain research designs, it is possible to understand a great deal about the perceptual abilities of infants.

Auditory Perception

As an illustration, consider the study of auditory perception in infants. Can newborns detect the difference between two similar sounds? To answer this question, an investigator might present a sound for 10 consecutive trials and at the same time monitor the infant's heart rate. As the infant attends to the sound for the first few trials, the experimenter observes a decrease in heart rate. This is a sign of attention to a

stimulus in young infants. However, by trials 9 and 10 the experimenter observes no change in heart rate at all. Because the sound is becoming familiar, the infant no longer attends to it.
Consequently, there is no change in heart rate.

What happens if a new sound is presented? If once again heart rate decreases, the experimenter infers that the infant attended to 1 new sound and was able to detect the difference between the new and the old Sound. Studies such as these reveal that new born infants can detect the difference between VI similar sounds, such as two tones that are only one step apart on the musical scale (Bridg 1961). Further research has revealed that newborns are very sensitive to pitch. Hi~ pitched sounds, such as a shrill whistle produce startle responses, while low-pitch sounds tend to calm the newborn (Eisenbe 1976).

Young infants are also remarkably sensitive to human speech (Acredolo & Hal 1982). For example, they can easily distinguish the human voice from other sounds. When presented with the sound of a bell a the sound of a female voice, infants respond more vigorously, as measured by leg movements and breathing patterns, to the sound the voice (Freedman, 1971). Still more remarkable, experimenters have found that as early as the first day of life newborns Synchronize their body movements to the sound patterns of adult speech. William Condon and Louis Sander (1974) filmed infants raring in age from 12 hours to 2 weeks as t infants listened to human speech sound, Detailed, second-by-second analysis of the videotapes revealed that the infants' hands, legs, elbows, and even toes either stopped, started, or changed direction in correspondence with changes in the intonation and content of adult speech.

Visual Perception

The infant's visual perception is also well developed. In the first few hours following birth, infants can both distinguish between light and dark and detect movement in their visual field. Newborns can also track, or follow, objects that are suspended above their heads and moved horizontally from one side to the other. This ability is rather fragile, however, until roughly 2 months of age.

Before then, infants track unevenly and often lose sight of the object as it moves from one side to the other. (Bronson, 1974).
What do infants attend to? One way to answer this question is to measure how long the infant gazes at a particular visual stimulus.

For example, if two different visual stimuli are suspended above the head of an infant lying in a crib, researchers can determine which stimulus the infant prefers to watch.
Robert Fantz (1961, 1963) first used this method in a classic series of studies of pattern perception in infants. He observed that infants over the age of 2 months preferred a circular bull's eye pattern to a solid disk. When Fantz extended his study to include the full range of stimuli , he discovered that infants ranging in age from 2 days to

6 months preferred to gaze at patterned stimuli (newspaper print, a bull's-eye). Of particular interest was the newborn's strong preference for faces.

Fantz relied on human observation to determine what infants found visually interesting. More recently, investigators have used specialized cameras to make precise recordings of infants' eye movements as they view complex visual stimuli, such as the human face (Salapatek & Kessen, 1966). This method has revealed that infants search the human face in systematic fashion. Newborns scan the periphery of the face and search for points of high contrast, for example, the hairline and the eyes. By 2 months of age, infants begin to examine the interior parts of the face (mouth, nose), including the eyes. Still later they are able to perceive the face as a single unit (Maurer & Salapatek, 1976). As infants become adept at perceiving the face as a whole, they can not only distinguish one face from another but can also begin to discriminate emotional expressions (happiness, anger) conveyed through the face (Klinnert, Campos, Sorce, Emde, & Svedja, 1983).

By 6 months of age, infants have acquired the ability to perceive depth, or to see objects in three dimensions. This skill was first observed in an ingenious experiment by Eleanor Gibson and Richard Walk (1960) involving the "visual cliff," an apparatus . As soon as they are able to crawl, infants show a fear of the "deep" end of the table. If placed on the "shallow" side, they will not cross over, even when beckoned by their mothers.

Subsequent research has shown that depth perception is a complicated phenomenon that may involve two distinct stages: (a) perceiving depth and (b) developing a fear of high places. For example, depth perception seems to exist even in infants who are not yet old enough to crawl. By simply placing six-week old infants on either the "shallow" or "deep" end of the visual cliff and recording changes in heart rate, a group of investigators determined that heart rate decreased (a sign of attention) when infants were placed on the "deep" end (Campos, Langer, & Krowitz, 1970). However, actual fear of heights seems to develop only after infants are able to move about. When infants who cannot crawl are provided with walkers, they begin to demonstrate fear of the "deep" end of the visual cliff (Campos, Svedja, Bertenthal, Benson, & Schmid, 1981).

Cognitive Development

Cognition refers to knowing and understanding. To study cognition, psychologists pose questions about the way people gather, process, and use information. But how does cognition develop? What are the steps that lie between an infant's first attempt to understand the outside world and the adult's ability to find solutions to complex problems?

No one has addressed this question more thoroughly than the late Swiss psychologist Jean Piaget. Piaget is unique among psychologists in proposing a theory of cognitive development from infancy to adulthood. In Piaget's view, there are four distinct periods of cognitive development: sensori-motor, preoperational, concrete operational, and formal operational. We have presented a brief description of each of these periods..

The fundamental assumption of Piaget's theory is that, over the course of a lifetime, cognitive skills undergo major qualitative changes. This means that during each period of development people know and understand the world in a distinctly different way. Thus, Piaget believed that people do not simply acquire more information as they grow older rather, they think and reason in a unique fashion at each successive period of development.

Piaget has made an enormous contribution to the study of cognitive development. However, some psychologists believe that recent discoveries challenge some of Piaget's notions and require a modification of his theory. To understand this debate, we will examine both Piaget's theory and the research of those who believe the theory should be modified. Our discussion proceeds chronologically, beginning with a description of cognitive development during the sensorimotor period.

1. The Sensorimotor Period

The sensorimotor period, which lasts from birth to approximately age 2, is the first of Piaget's four major period of cognitive development. During this period infants understand their world by physically manipulating the objects around them. In the sensorimotor period they learn, quite literally, by pushing, banging, and poking.

Piaget began his study of infant cognition through detailed observations of his own three children (Piaget, 1952). These observations convinced Piaget that during the first month of life, infants focus almost exclusively on their own bodies. They show little interest in or awareness of the world around them. In Piaget's view, the primary accomplishment at this time is progressive refinement of some simple responses present at birth, such as sucking and grasping. What happens next is a shift from interest in self to an interest in objects outside the self. Piaget believed that this occurs because infants learn to coordinate one sensory skill with another. For example, three-month-olds will gaze at an object and then move their hands toward it, while continuing to alternate their gaze between hand and objects. As their interest in the outside world grows, infants begin to explore what they can do to objects. For example, 6-month-olds will push, poke, mouth, and bang whatever is within reach. Curiously, Piaget observed that this activity begins almost by accident. A typical 6-month-old might grasp and shake a new toy. Unexpectedly, the toy a rattle makes a distinct rattling sound. Delighted with this outcome, the infant responds by shaking the rattle again. Soon the action is repeated, but it is no longer by chance.

At first glance, these observations may seem commonplace. Certainly, others have noticed that infants push, pull, and poke at objects. But Piaget was the first to suggest

that this physical exploration of the environment is cognitively productive and not just aimless? Play. For example, Piaget proposed that frequent interaction with objects leads eventually to the development of object permanence, the notion that an object continues to exist even after it disappears from view. Piaget proposed that infants, somewhere between the ages of 8 and 11 months, can search for and retrieve an object hidden in a single location. Before that time, infants behave as though an object that is out of their sight is also "out of mind".

Table : Description of Piaget's Four Periods of Cognitive Development

Period	Age Range	Characteristics
Sensorimotor	Birth to 2 years	Infant begins to separate self from others. Explores the physical properties of objects in the environment. Learns that objects exist even when they are no longer in view. Begins to imitate others and to speak and understand simple words.
Preoperational	2 to 7 years	Language develops rapidly but is often used egocentricafty, without an awareness of the listener's perspective. Cognition is limited. Child believes, for example, that the amount of water in a glass changes when the water is poured into a container of a different shape.
Concrete Operational	7 to 11 years	Cognition becomes more logical and adultlike. Child no longer believes that the shape of a container determines the amount it holds. Child reasons accurately about the qualities of objects
Formal Operational	11 years through adulthood	Cognition becomes fully flexible. People reason abstractly. Can form hypotheses and evaluate them mentally, sometimes in the absence of concrete objects.

Piaget felt that during the second year infants become progressively more sophisticated in their understanding of the physical properties of objects. In his view, the infant's exploration of objects becomes more purposeful, deliberate, and systematic after the age of 12 months. For example, many 15-month-olds often look like young physicists as they purposefully manipulate the objects around them. Piaget has described in detail how this systematic experience with objects leads to an improved understanding of the physical world. As one example, he argued that during their second year, infants are capable of discovering a hidden object even after it has been moved from one hiding place to another.

Piaget believed that the sensorimotor period culminated with the development of symbolic thought. This is the capacity to construct a mental representation of an object-a symbol-and to deal with the symbol as though it were the object. Pretending that one object is another (for example, a spoon is a small racing car) is one example of symbolic thought using language, that is, designating words for objects, is another. Piaget saw considerable development in cognition during the sensorimotor period.

From an initial interest in their own body, infants progress to an interest in external objects, first in a somewhat haphazard fashion and then ever more systematically as they move into the second year. Eventually, infants become so comfortable and sophisticated in their object exploration that they can mentally represent, through symbols, objects that are not physically present.

2. The Preoperational Period

By the end of the sensorimotor period, the child has accomplished a great deal. Life is no longer confined to the here and now. People come and go, objects appear and disappear, but the 2-year-old is surprised by none of this. At age 2, most children can remember past events, engage in pretend play, and, begin to use language effectively.
But for all their sophistication, young children still demonstrate thought processes that are dramatically different from those of adults. It is difficult to imagine an adult protesting that a sandwich cut into four pieces contains more to eat than the same sandwich cut into two pieces, but more than one 5-yearold has registered such a complaint. This unique perspective often leads the young child to make statements that adults find amusing. Witness the 3-year-old who answers the telephone and is asked, "Is your Mommy home?" "Yes," says the child, and then hangs up the phone.
Piaget believed that this type of reasoning is part of the preoperational period of development. The preoperational period, which others refer to as early childhood, extends from approximately age 2 until age 7. It is during this period that the child makes great strides in using and understanding language. However, Piaget's research led him to believe that there were definite limits on the preoperational child's reasoning skills. These limitations can be seen clearly in the young child's performance on one of Piaget's classic problems: the conservation task.

Conservation, as Piaget defined it, simply means that any quantity-number, volume, length, weight-remains the same despite physical changes in the arrangement or shape of an object or objects. A good illustration of this concept is the conservation of liquid problem. A child is presented with two identical glasses containing equal amounts of water. In full view of the child, the experimenter pours the water from one of the glasses into a third glass that is both taller and thinner than the two identical glasses. The experimenter than asks whether the two glasses that now contain water hold equal amounts, or whether one glass has more than the other.

A preoperational child, that is, one who has not mastered the concept of conservation, believes that the taller glass now contains more water. Why is this so? Piaget believed that preoperational children reason intuitively rather than logically. They are influenced by what they see. Thus, the preoperational child believes that because the water level is higher in the tall glass, it must contain more water. Intuitively, this may be correct (taller objects often do contain more), but according to Piaget, such reasoning ignores the logical principle of reversibility. Reversibility implies that every action has a logical opposite. Something that can be done can also be undone without any gain or loss. Thus, if water is poured from one glass to another, logically it can be returned to the first container without any change in quantity.

3. The Concrete Operational Period

Piaget believed that at approximately age 7 the child becomes capable of logical reasoning. This capacity signals a new phase of development which Piaget designated the concrete operational period, the period during which the child begins to understand logical concepts. The concrete operational period extends from age 7 until roughly age 11 and corresponds to the period that other psychologists refer to as middle childhood.

The concrete operational child understands the concept of conservation. For example, this child asserts that after the water is poured into the tall glass (Figure 10.7), the two glasses that now contain water hold equal amounts. When asked to justify their choice, concrete operational children often verbalize their understanding of the principle of reversibility with comments such as, "You could just pour it back and it would be like before." Although Piaget believed that all conservation problems require an understanding of reversibility, he did acknowledge that the concept of conservation develops slowly. In fact, there is a definite sequence to the child's understanding of conservation. Conservation of number is acquired first, somewhere around age 5 or 6. It is followed in turn by conservation of liquid, the problem we have just described, which is followed by conservation of weight and then by conservation of length. The entire process is not completed until approximately age 11. In all of these problems, the procedure is essentially the same as the one described for the conservation of liquid (see Figure 10.8).

Piaget believed that a major change in cognition occurs when the child begins to master the concept of conservation. Now the child is thinking logically. With an understanding of the concept of reversibility, the child no longer makes judgments solely on the basis of how things appear (Piaget & Inhelder, 1969).

Nevertheless, Piaget saw limitations in the child's reasoning. In the concrete operational period, children reason logically when the problem is displayed before them. In the presence of objects that can be viewed and sometimes manipulated, they demonstrate a practical, concrete form of intelligence. It is not until the next period of development, however, that children begin to demonstrate more abstract forms of thinking.

4.The Formal Operational Period

Beginning at approximately age 11 and continuing through adulthood, people acquire new reasoning skills which Piaget labeled formal operational thinking. In the formal operational period, the essence of thought is the ability to reason hypothetically-to consider beforehand all possible solutions to a problem. Unlike the concrete operational child, the formal operational thinker can reason about what could be as well as what actually is.

To illustrate, consider the responses of a 9-year-old and a 14-year-old to one of Piaget's classic problems of formal operational thought (Inhelder & Piaget, 1958). In this experiment, subjects are shown four different beakers, each containing a colorless chemical solution Figure. The examiner hands each subject a small dropper filled with the chemical potassium iodide and a small dish to mix the liquids. The subject is told that when the potassium iodide is combined with one colorless liquid or with a combination of colorless liquids, a bright yellow solution will appear. The task is to determine how the yellow solution is produced.

The typical 9-year-old subject will mix the potassium iodide with the colorless liquids in random fashion. Frequently one combination is tried, then forgotten, and then tried again a few moments later. This child may happen upon the correct solution, but success will result from persistence rather than from insight. By contrast, a typical 14-year-old will plan a course of action that involves a systematic test of the possible solutions. Thus, if the 14-year-old first combines the potassium iodide with the liquid in each container and no color results, on the next attempt this subject will combine the potassium iodide with the liquid in the first two containers. If a colored solution now appears, the 14-year-old will deduce that although the liquids in the first two containers did not produce the color individually, they did produce the color when mixed together with the contents of the dropper (Inhelder & Piaget, 1958).

This experiment illustrates two of the distinctive features of formal operational thought: (1) the ability to consider beforehand a variety of hypothetical solutions to a problem, and (2) the ability to reason about the possible as well as the actual. Piaget believed that the ability to think in this fashion was critical to higher forms of human reasoning. He viewed the formal operational period as the culmination of a process of thinking and reasoning that begins in infancy.

Criticism of Piaget's Theory

Piaget made an enormous contribution to the study of human development. No other theorist has proposed such a broad and insightful account of how cognition develops from infancy to adulthood. Piaget's work has spawned years of fruitful research into human cognitive processes.

Nonetheless, over the past decade Piaget's theory has received considerable criticism often aimed at his methodology. A number of psychologists feel that Piaget's methods were necessarily complex. As a result, they believe that children are often more competent than they appeared to Piaget (Gelman & aillargeon, 1983).

To illustrate, let us return to the conservation problem. Recall that conservation, as Piaget defined it, means that quantity does not change even if the arrangement or shape of objects does. Piaget believed that children mastered conservation when they understood le principle of reversibility. This principle states that something which is done can also b undone without any gain or loss. However, other investigators have questioned whether reversibility is really the key to the child's understanding of conservation. As an example, consider the conservation of number task. The experimenter places to parallel rows of five pennies before the child. Once the child agrees that the two rows contain an equal number of pennies, the experimenter extends one of the rows. Now the child is asked, "Do the two rows still contain the same number of pennies, or does one row now have more?" According to Piaget, children who say the extended row has more pennies shave not mastered conservation of number. But suppose the child thinks that the word more refers to the length of each row instead of the number of pennies. The child would respond "yes," meaning that the extended row is longer. Thus, the child's failure might show only that the experimenter and the child have a different understanding of the problem.

To overcome difficulties like these, psychologists Rochel Gelman (1969) attempted to teach preoperational children who could not conserve number how to focus on the critical dimension of the conservation problem.

Her strategy was to reinforce children for lying attention to number rather than length. For example, on one trial Gelman showed the children three wooden blocks with small toys attached to each block. Two of the blocks contained an equal number of toys, but the toys were arranged so that they differed in length. A third block contained toys at differed in number from the first two, It these toys were arranged so that they were equal in length to one of the other two blocks.

The children's task was to choose the two blocks that displayed an identical number of toys. If the children responded correctly, the experimenter rewarded their choice. If they responded incorrectly, the experimenter told them that the choice was wrong. In this way Gelman attempted to direct the attention of preoperational children away from the irrelevant dimension of length. The strategy worked.

When these same children were assessed later for mastery of number conservation, virtually all of them passed the test. Furthermore, they retained their understanding of number conservation in a follow-up test administered one month later.

The issue raised in this study highlights the concern of many psychologists who believe that children often possess abilities that Piaget's methodology failed to detect (Flavell, 1985). Thus, while many psychologists agree with the broad outlines of his theory, they are beginning to question whether children know more, at an earlier age, than Piaget believed.

Memory and Reasoning----------

The development of memory is one of the factors that contributes to advances in cognition during the childhood years. Not only are children capable of remembering more as they grow older, they also develop strategies for remembering. Or as one psychologist observed, with increasing age children display metacognition, that is, they "know how to know" (Brown, 1975).

Strategies for Remembering

Adults can use both rehearsal and retrieval cues to improve their memory. But what do children know about the art of remembering? One way to answer this question is to examine how children use memory in problem-solving situations.
A problem children sometimes encounter is remembering items in a list. A practical strategy in such a situation is verbal rehearsal of the items. However, studies of children's rehearsal strategies show an interesting developmental trend. Children at 5 years of age almost never rehearse items they need to recall, 7-year-olds rehearse occasionally, and by age 10 almost all children will rehearse what they subsequently need to recall (Flavell, Beach, & Chinsky, 1966). Even more striking is the finding that young children cannot be taught to use rehearsal strategies consistently.

When encouraged to do so, 5- and 6-year-olds will rehearse but will immediately revert to their old ways when given the option of either rehearsing or not rehearsing (Keeney, Cannizzo, & Flavell, 1967). Young children simply do not make effective use of memory strategies. As one example, consider what happened when groups of 6-, 8-, and l1-year- olds were presented with the task of recalling a picture of three animals commonly found in a zoo (such as a bear, a monkey, and a camel), and the option of using a cue card designed to aid their recall (a picture of a zoo with three empty cages, for instance), the groups differed dramatically in their use of the cue.
Very few 6-year-olds paid any attention to the cue card. In contrast, almost all the l1-year-olds used the cue card effectively, while the 8-year-olds were intermediate in their use of cueing (Kobasigawa, 1974).

Meta-memory

The development of memory strategies is only part of a growing competence in memory and reasoning. In the middle childhood years, children also begin to reflect on their own memory and reasoning skills. Meta-memory, or knowledge about memory-knowing-how

much one can remember, how long it takes to commit something to memory and the like-is the term used to define this capacity.

How do psychologists study the development of metamemory? One way is to determine what people of different ages know about the limits of their memory capacity. For example, in a typical study an experimenter placed two pictures of common objects in front of subjects ranging in age from 5 to 20 years. The subjects were asked if they thought they would be able to name the objects in the pictures after the experimenter covered them up. The experimenter continued with this procedure, gradually increasing the number of pictures from 2 to 10. On each trial the subjects guessed whether they could remember the objects, while the experimenter tested their actual ability to do so. When did the subjects realize the limits of their memory capacity? The children under 7 years of age consistently overestimated their ability to remember the pictures. They often thought that they could recall many more pictures than they were capable of remembering. But by 9 or 10 years of age, the children gave realistic estimates of what they could remember. In fact, children of this age estimated what they could remember about as accurately as the 20-yearold subjects (Flavell & Wellman, 1976).

Social Development in Infancy----------

Throughout infancy and childhood, children make enormous strides in the development of cognition. But there is more to human development than knowing how to process and remember information. Children also learn how to live and interact with others. They form a series of close relationships, first with parents and later with peers. Children learn how to relate to others in formal settings, such as the classroom, and in informal settings, such as the playground. Along the way, they acquire a knowledge of gender-a sense of the similarities and differences between boys and girls. This process of developing as a person and learning how to relate to others is known as social development.

Social relationships begin in infancy. As early as the first few months of life, infants begin to smile, vocalize, and even laugh as they interact with their parents. For their part, parents take an active role in eliciting these responses. They talk to their infants, hold and touch them playfully, and care for their basic needs. In these first few months, parents and infants establish a close emotional bond that will last for many years. In psychological terms, they develop an attachment relationship.

Attachment

Attachment is defined as an intense emotional relationship that is specific to two people, that endures over time, and in which prolonged separation from the partner is accompanied by stress and sorrow (Kagan, 1978). Clearly, the attachment between parent and child is one of the many love relationships that humans experience. Both parents and infants play a role in the development of attachment. Although the roles are different, each partner contributes meaningfully to the relationship. That is why psychologists refer to the interactive nature of attachment.

The Parents' Role in Attachment

How do parents promote a good attachment relationship? An obvious answer is that they satisfy the infant's basic needs. which in turn leads the infant to develop positive feelings for the parents. Infants do in fact have many basic needs. They require feeding, clothing, bathing, and the like. In addition to these physical needs, infants also require attention, affection, stimulation, and comfort. But which of these needs is most important? Do infants form an attachment relationship because parents care for their basic needs? Or is holding, caressing, and stimulating the infant also crucial? Perhaps some combination of the two is required for a strong attachment bond.

Interestingly, this question was first addressed in a series of classic studies of rhesus monkeys conducted by Professor **Harry Harlow** of the University of Wisconsin. Harlow first separated infant monkeys from their mothers. Then he provided each infant monkey with two different artificial "mothers." These substitute mothers were actually wire mesh cylinders with a wooden head attached to the top. One was covered with a soft terrycloth lining while the other was left uncovered. Either artificial mother could provide nourishment through a bottle attached at the center of the cylinder.
When Harlow measured how much time the infant monkeys spent in contact with each of the substitute mothers, he found that all the infants preferred the terry-cloth substitute, including those who received their nourishment exclusively from the wire mother (Harlow, 1958).

Subsequent research revealed that infant monkeys also chose an artificial mother that rocked over one that remained motionless, and that they preferred a mother that was warm (heated with coils) to one that was cold (ice water circulating through it). In the first 2 weeks of life, the preference for warmth was so great that the monkeys preferred a wire mother that was heated to a terry-cloth mother that was cold, but in subsequent weeks the infants showed a decided preference for the terry-cloth mother (Harlow & Suomi, 1970). Harlow's research established that infant monkeys needed more than nourishment from their mothers. They required rocking, warmth, and most of all, contact with something soft. In Harlow's words, they had an inborn need for "**contact comfort**"- the desire to cling to and be near a soft, comforting object. Despite the softness and comfort of the terry-cloth mothers, though, infants reared exclusively with these artificial mothers did not develop normally. In adulthood, they were extremely aggressive and rarely interacted well with other monkeys. Sexually, they made inappropriate responses and were difficult or impossible to breed. For monkeys, then, normal development also depends on interaction with other members of the species during the first 6 months (Harlow & Suomi, 1970).

We must always be cautious in generalizing from animal experiments to the human experience. However, the findings from Harlow's laboratory suggest that simply caring for the infant's basic needs is not sufficient for the development of attachment. For

humans, the implication is that parents contribute to a strong attachment by linking basic care with frequent episodes of holding, caressing, and talking to the infant.
Studies of young infants have shown that attachment is facilitated by the tactile contact, stimulation, and attention that parents provide (Klaus, Jerauld, Kreger, McAlpine, Steffa, & Kennell, 1972; Schaffer & Emerson, 1964). Indeed, on the basis of their observations, **Marshal Klaus and John Kennell** (1976) have advanced the extended-contact hypothesis.

These experimenters, working in the maternity ward of a hospital, compared mothers who had 16 hours of contact with their infants in the first few days following birth to mothers who had only brief periods of contact.

The results were very striking. One month later, the mothers who experienced the more extensive contact showed a stronger tendency to caress their infants. They also soothed them more often during a physical examination and gazed at them more frequently. Follow-up studies when these infants were 1 and 2 years old produced similar results.
We have spoken rather exclusively about mothers, but what of fathers? Research in the past decade has shown that fathers' caregiving-changing, clothing, and feeding the baby-is very effective and in many ways indistinguishable from mothers' caregiving.

Fathers play with their infants, stimulate them intellectually, and feel protective toward them (Parke, 1981). Not surprisingly, infants respond well to all this attention.
There seems to be little difference in the way children form attachments to their mothers and fathers (Lamb, 1976). Where there are differences, however, is in the mothers' and fathers' preferred style of interaction. Videotaped analyses of infants and parents revealed that mothers played more verbal games, consisting of "bouts" of talking and cooing. For example, mothers would look at their babies and vocalize, and the babies in turn would coo softly. Fathers, on the other hand, tended to play more physical games, such as tickling or patting their babies' hands and legs. There are, then, differences in style of interaction, but no differences in quantity or even quality of mothers' and fathers' caregiving (Y ogman, Dixon, Tronick, Als, & Brazelton, 1977).

The Infant's Role in Attachment

How do we know if an infant has formed an attachment relationship? The answer is that infants make certain discriminatory behaviors that allow us to infer that an attachment relationship has developed. A discriminatory behavior is one that is directed toward one adult far more frequently than toward other adults. There are three types: (1) seeking and maintaining proximity with the attachment figure; (2) willingly exploring unfamiliar places and objects in the presence of the attachment figure; and (3) crying or fussing upon separation from the attachment figure I Kagan, Kearsley, & Zelazo, 1978; Lamb, 1974). Sometime between 6 and 12 months of age, infants begin to direct these behaviors exclusively toward their parents. For example, a 10-month-old girl may use her father as a secure base from which she ventures out to explore a strange room

outfitted with novel toys, or a l-year-old boy playing quietly may suddenly burst into tears if his mother leaves the house for even a brief period of time.

Although it is not possible to determine unambiguously that infants are attached to their parents until sometime between 6 and 12 months of age, the first 6 months are nonetheless important in the attachment process.
During this time, infants take a number of steps that serve to strengthen and mold the relationship between parent and child. For example, smiling is one of the infant's most effective behaviors in promoting attachment. Parents often interpret smiling as an indication that the infant is happy and content and that their care giving is effective.
Crying is also important to the development of attachment. It is an effective way for the infant to signal to the parents that they should attend to the infant's needs. Two other infant behaviors effective in promoting attachment are gazing and vocalizing. The young infant's gaze is attracted both to objects that have high black-and-white contrast and to objects that move. The human face, with eves that move back and forth and several areas of contrast, is quite naturally appealing to infants. Observations of infants and parents confirm that they find it rewarding to engage in mutual gazing (Stern, 1977). Like-wise, infant vocalizations often produce a response from the parents. If an infant vocalizes, parents are likely to smile or vocalize in return, which often sets in motion yet another infant response.

The Significance of Attachment

There seems little question that a strong attachment is an important first step in social development. Research on mother-infant interaction, for example, has shown that l-year olds who are comfortably and securely attached to their mothers cry less often, respond more to their mothers' commands, and are less upset by their mothers' temporary absence than l-year-olds who are anxious and insecure in their attachment (Ainsworth, 1974). More recently, researchers have discovered that it is important to consider the infant's attachment to both parents. In this study, l-year-olds were classified as securely attached to both mother and father, to one parent but not the other, or to neither parent. Infants who were securely attached to both parents were more sociable than those attached to only one parent, while those attached to neither parent were the least sociable of all (Main & Weston, 1981). Clearly, the infant's relationship to both father and mother is an important factor in the development of attachment.

While most psychologists believe that a strong attachment is an optimal first step, there is less agreement on the consequences of not forming a positive attachment. Some theorists have suggested that the failure to form a primary attachment is linked to an inability to develop close personal relationships later in life (Bowlby, 1973). Others, however, believe that early experiences are reversible and that frequently people can overcome the effects of a poor start in life (Clarke & Clarke, 1976; Lerner, 1984).

To examine this question, investigators have studied people who spent their early years in institutions. Although today most institutions provide excellent services for children

whose parents do not or cannot care for them, in the past, some institutions met only the basic physical needs of children and provided little in the way of emotional support. Quite frequently only a few people were available to care for many different children, and the institutions themselves were dreary and unattractive places to live (Casler, 1967; Provence & Lipton, 1962). There is no question that this type of early environment adversely affects the social and emotional development of the child. Infants who experience an extended upbringing like this become very withdrawn, apathetic, and fearful of adults (Provence & Lipton, 1962). However, a number of recent studies have found that early deprivation is reversible (Clark & Clarke, 1976). Children who were deprived of a close emotional attachment in their early years sometimes show remarkable recovery once they are adopted or placed in more favorable circumstances (Clarke & Clarke, 1972).

What can we conclude about the significance of attachment? It appears that attachment to one or two people is an optimal way for social development to begin. In the words of Erik Erikson, a prominent theorist whom we shall discuss in more detail in the next chapter, the primary social accomplishment of infancy is a basic sense of either "trust or mistrust." That is, the outcome of the attachment is either a hopeful, trusting attitude that disposes the child toward positive relationships with others, or a fearful and anxious attitude that tends to disrupt social development. However, we cannot conclude that future development is completely determined by the outcome of the attachment relationship. The experiences of later childhood, and as we shall see, those of adolescence and adulthood, have a major impact on social and emotional development.

Social Development in Childhood

Attachment is just the beginning of social development. Relationships with parents continue to develop and become more complex during the childhood years. Consciously or unconsciously, parents impart values and beliefs to the child. Children, in turn, develop a sense of who they are and where they belong in the context of their relationships with parents and peers. In fact, relationships with parents and peers are two of the major avenues of social development in the childhood years. In the remainder of this section, we will examine each of these relationships, along with one of the major outcomes of social development-the formation of gender roles.

Parent-Child Relationships

Parents are involved in many different aspects of their children's lives. They control and discipline the child. Through their own actions, they mold and shape the child's attitudes and beliefs. And they make a wide variety of decisions for the child, ranging from what schools the child will attend to what television programs the child may watch. In a word, they are intimately involved in the process of child rearing.

Child Rearing

One way to study child rearing is to take a broad view of how parents interact with their children. That is, apart from specific actions.
such as feeding children or dressing them for school, how do parents praise, punish, and communicate with their children?
One investigator found major differences among parents on these broad dimensions of child rearing. After conducting extensive interviews with parents and observing them at home with their 3- to 4-year-old children, psychologist Diana Baumrind identified four dimensions of child rearing. These were (1) control, or parental attempts to shape and modify expressions of dependent, aggressive.
and playful behavior; (2) demands for maturity or pressures on children to perform up to their ability; (3) clarity of communication, or seeking out children's opinions and using reason when demanding compliance from children; and (4) nurturance, or expressions of warmth toward children and pride in their accomplishments.

Baumrind observed that parents differed considerably on these dimensions. Furthermore, she noted a relationship between parental child-rearing practices and children's behavior. By observing children both at home and at school, Baumrind identified three different groups who had experienced three different patterns of parenting. Children in the first group were self-reliant and socially competent in their dealings with peers and teachers. Their parents received high ratings on all four dimensions of child rearing. That is, their parents were warm and loving people who listened to their children but who also firmly communicated their ideas about appropriate behavior. Children in the second group were quite confident and self-reliant but also socially- withdrawn and generally distrustful. These children had parents who were highly controlling but not very warm or affectionate, and who only rarely expressed an interest in their children's opinions. The third group was quite immature. These children were very dependent and passive, and their parents scored low on all dimensions except nurturance. These children were given warmth and affection but lax and inconsistent discipline and very little encouragement to think and act for themselves.

In subsequent research, Baumrind used the longitudinal method to follow her original subjects until the children were adolescents Baumrind, . The results of this followup investigation confirmed the findings from her first study. Socially competent and mature children have parents who are warm and loving, solicitous of their children's opinions, yet at the same time firm and clear about their expe ctations for appropriate child behavior. Baumrind observed that this style of parenting may be particularly important for the development of competence in boys (Baumrind, 1983).

Maternal Employment

Today, many families have working mothers. While some mothers have always worked, there has been a dramatic rise in maternal employment over the past two decades, particularly among mothers of young children. For example, in 1960 only 20 percent of mothers with children under 6 years of age worked outside the home, but by 1980 this figure had risen to 50 percent (Barglow, Vaughn, & Molitor, 1987). Some experts

believe that by 1990, approximately 75 percent of mothers with young children (less than 6 years of age) will join the workforce (Belsky, Steinberg, & Walker, 1982).

How does family life differ when mothers work? In two-parent families, maternal employment seems to foster a less traditional household. When the mother works outside the home, the father is more likely to participate in child care and to perform some traditional household chores, though the mother still bears the larger share of the work (Hoffman, 1984b). School-aged children in such a family typically have more chores and duties than children raised in homes where the mother does not work outside the home. Perhaps most striking is the difference in attitudes of children of employed mothers. Both sons and daughters of working mothers have fewer stereo typic beliefs about men and women. For example, they believe that women are entitled to opportunities for high-paying professional jobs and that household duties should be shared by husband and wife.
They also respect the competence of women to a much greater degree than the children of mothers who do not work outside the home (Hoffman, 1984b).

Day Care

In many societies, child rearing is not solely the responsibility of parents. Mothers in both China and the Soviet Union, for example, are encouraged to work full time while their children are cared for in state-supported institutions. Some children begin attending these programs as early as 2 months of age, so that even their early care and development is partially the responsibility of someone else. In Israel, child-care professionals provide much of the daily care for the children living on collective farms or **kibbutzim.**
In North America, however, child care traditionally has been provided at home exclusively by the mother. But as we have seen, the situation is changing. With more mothers of young children working outside the home, **multiple cares**, that is, care by the parents in addition to someone else, has become increasingly common. Today, roughly, 45 percent of children under the age of 6 are cared for by nonrelatives for some portion of the day, 32 percent in a home day-care setting (a private home with an adult caregiver) and 13 percent in a nursery school or day-care institution (Clarke-Steward & Fein, 1983). With such a dramatic rise in the frequency of alternative care, psychologists have wondered about the effects of day care on the social and emotional development of young children.
What do investigators find when they compare children who are exclusively home-reared with children who have experienced some form of day care? In general, day care does not seem to produce detrimental effects and may well be a positive influence for many children. Children in high quality day-care programs develop warm and affectionate bonds with their caregivers. However, they continue to prefer their own parents and do not, as was once feared, form a stronger relationship with their temporary caregivers.

Furthermore, by the time children reach preschool age, those who attend day-care programs are typically more outgoing and self confident, though they also tend to be less compliant and more quarrelsome than their home-reared counterparts (Clarke-Stewart & Fein, 1983).

There is, however, an unanswered question about the quality of the attachment relationship in children who begin day care at an early age. Some investigators believe that the children of mothers who work during the first 12 to 18 months of the child's life experience some disruption in the mother-child attachment bond. Specifically, these researchers find that such children are more insecure and avoidant of their mothers after a brief separation (Barglow, Vaughn, & Molitor, 1987; Schwartz, 1983). Others, however, feel it is premature to reach such a conclusion until we develop different attachment measures and know more about the various kinds of day-care arrangements that young children encounter (Clarke-Stewart & Fein, 1983; Hoffman, 1984a).

Peer Relationships

Although relationships with parents are important to the child, they are not the only influence on social development. In recent years, psychologists have become interested in peer relationships. Peers are children of roughly the same age who share similar interests. There is reason to believe that peers play a unique and important role in social development.

The Development of Peer Relationships

Children all over the world form peer groups. These groups differ in their specific function, but they all play important roles. In North America, peer groups are typically concerned with both play and exploration of the environment. But in other countries, notably the Soviet Union, the peer group helps instill societal goals. Soviet society stresses obedience and cooperation with the state, and children are expected to assume some of the responsibility for the discipline and exemplary behavior required of their peers (Bronfenbrenner, 1970).

Although it may seem surprising, peer relationships actually begin as early as the second half of the first year. Somewhere between 6 and 12 months of age, infant! begin to respond to the social signals of then peers Uacobson, 1981). For example, by 10-months of age, children who have frequent contact with each other, such as those enrolled in day-care centers, begin to smile and vocalize to each other (Lee, 1973). Infants of this age also touch, gaze, and even follow after one another. It is even possible to distinguish the "popular" from the not-so- popular infants by observing how frequently an infant is approached by other infants.

Peer relationships develop rapidly throughout the second year. By the time children are 3 or 4 years old, they are involved in make-believe episodes and even some structured

games. In the course of peer relationships, children become more capable of contingent social responses. This means that as they grow older, children are more likely to observe a playmate's action and then respond immediately with a social behavior of their "m (Mueller & Vandell, 1979).

For example, two 12-month-old children may initially be drawn to each other because of their mutual interest in an attractive toy. They may play with the toy frequently or even take turns using it, but only rarely does one child pay heed to what the other is doing.

But by 18 months of age, these two children will show a clear interest in each other. One child may bang on the toy and vocalize to the partner, who in turn smiles and imitates the banging. A few months later, the two partners will show a beginning awareness of the role that each plays in a social interaction. In a "game" of run and follow, one will doggedly pursue the other, perhaps yelling out that the leader is about to be caught. Then suddenly they will switch roles and the follower becomes the one who is leading the chase around the room. In switching roles 'back and forth, the children are prefiguring the more advanced roles that are common to 4- and 5-year-olds. These roles-Mommy, Daddy, doctor, nurse, and so forth-form the basis for much of the child's peer interaction throughout early childhood.

The Significance of Peer Relationships

How important are peers to the development of social relationships? As with attachment, Harlow's studies of rhesus monkeys provide a partial answer to this question. You may recall that if infant monkeys are isolated from other members of their species, they become extremely aggressive and unmanageable.

Furthermore, isolated monkeys are very difficult to rehabilitate. Harlow found that a variety of techniques, such as gradually introducing the isolated monkeys to adult monkeys, did not improve the isolates condition. However, Harlow and his co-workers did discover an interesting way to rehabilitate socially isolated monkeys. They took a group of monkeys who had spent their first 6 months alone and placed them in the company of normal monkeys who were 3 months younger. At first, only the normal monkeys made appropriate social responses. They would approach the isolates and cling to them or try to interact playfully with them. Within a short period of time, the isolates began to respond to the initiatives of the normal monkeys and playful interactions occurred. Once the isolates had entered into play, they began to develop normally and were soon initiating interactions with the other monkeys.

What Harlow observed, then, was that younger peers were successful in rehabilitating the social isolates. Could peers play a similar role in human interactions? To find out, a team of experimenters took a group of socially withdrawn children and placed them with normal children who were 16 months younger. For 3 weeks, the withdrawn children interacted with the normal children on a daily basis. A control group of withdrawn children received no treatment. At the end of the 3week period, the social skills of the withdrawn children were reassessed. The results of this experiment were quite similar to what Harlow observed. The withdrawn children who interacted with the younger peers

made considerable progress in their social skills, particularly in comparison to the control subjects.

These studies demonstrate the importance of peer relationships in modifying abnormal behavior, but peers are also important in the course of normal social development. For example, research has shown that children's play is enhanced through interaction with age mates. In one study, a group of 2-year-olds was observed on one occasion playing with a friend and on another playing with their own mothers. The experimenters found that the longest play episodes and the highest levels of play occurred with peers (Rubenstein & Howes, 1976). Mothers may quickly tire of putting a pot on their head and pretending it's a hat or of jumping off a step 20 times in a row, but 2-year-olds seem to complement each other perfectly in these activities.

Gender and Gender Roles----------

One of the major achievements of the childhood years is the development of a sense of gender, an awareness and understanding of the differences that distinguish males from females. To know your gender-that you are either male or female-is to have a powerful sense of who you are and how others will respond to you. For better or worse, gender shapes the responses of others. Even in the earliest days of infancy, our gender influences how people react to us. For example, when parents announce the birth of a child, the first question asked by friends and relatives is whether the baby is a boy or a girl.

Early in the childhood years, children become knowledgeable about gender. They know whether they are a boy or a girl, that boys become men (and sometimes husbands and fathers), and that girls become women (and sometimes wives and mothers). Simultaneously, children acquire knowledge about gender roles. Gender roles are the attitudes, beliefs, and behavior patterns that people associate with being male or female. Gender roles are often stereotypic and controlling.
Males are expected to act in one manner, females in another. Thus, gender and gender roles are very closely associated. As children discover who they are-boy or girl-they also acquire powerful stereotypes about how boys and girls are expected to think, act, and feel.

The Development of Gender Roles

All Societies have carefully defined gender roles. For example, you have probably grown up expecting men to be more dominant and assertive than women, and expecting women to be warm, nurturing, and supportive. This division of gender roles is common to a number of societies but is by no means universal.

Among the Tchambuli of New Guinea, for instance, women are independent and aggressive while the men are obedient and nurturing (Mead, 1935). Clearly, societies can differ a great deal in the roles they prescribe for women and men.

In most societies, children acquire gender roles very rapidly. In the North American culture, for instance, the play of 3- to 5-yearold children already reflects traditional distinctions between men's and women's roles.

When children of the opposite sex play together, young boys consistently choose roles such as Daddy, bus driver, and doctor, while girls prefer Mommy, teacher, and nurse (Grief, 1977). Furthermore, this preference for traditional roles is very difficult to modify.

In one convincing demonstration, young children watched a film about a female physician who was assisted by a male nurse. Afterwards the children were asked to summarize the film. Both boys and girls reconstructed a story about a male doctor and his female nurse (Cordua, McGraw, & Drabman, 1979).

How do children acquire the gender roles that are associated with their culture? How do they come to know what is traditionally male or female within their society? Such knowledge is acquired through the process of sex typing, which begins in infancy and continues throughout childhood (Huston, 1983). It is through sex typing that children acquire knowledge about the expected or stereotypic attitudes, beliefs, and behaviors associated with their gender in their culture. In attempting to account for the ways in which children acquire this knowledge, psychologists have proposed three theories of sex typing.

The Psychoanalytic Perspective

One theory of sex typing is the psychoanalytic perspective found in Sigmund Freud's writings on childhood sexuality (Freud, 1905/ 1957). We will discuss Freud's theory in greater detail in chapter 14, but for the moment we note that Freud believed that around 5 or 6 years of age children develop unconscious sexual desires for the opposite sex parent.

These sexual feelings are so threatening that the child must find some way to cope. The solution, Freud believed, was to adopt many of the characteristics of the same sex parent.

Thus, boys would assume the attitudes and behavior patterns of their fathers, and girls would do likewise with their mothers. This process, known as identification, allowed the child to experience vicariously the love and affection that the opposite sex parent expresses for the same sex parent.

Identification may well promote sex typing, but critics of Freud note that children are aware of gender roles long before the age of 5 (Frieze, Parsons, Johnson, Ruble, & Zellman, 1978). Recent evidence suggests that even in infancy boys become partial to stereo typically masculine toys, such as trucks, and girls develop a preference for stereotypically feminine toys, such as dolls (O'Brien, Huston, & Risley, 1983). These findings suggest that other mechanisms must promote sex typing.

The Social Learning Perspective

Social learning theorists have often focused on the role of parents in gender-role development. Because of their intense involvement with children, parents may influence the development of gender roles in a number of different ways. Sometimes they do so consciously, as when a girl is encouraged to attend ballet classes but prohibited from playing baseball. Usually, parents are simply unaware of the subtle influences they exert on gender-role development. Through their choice of toys, their manner of speech, or even their expectations for the child, parents model and reinforce what they regard as appropriate masculine and feminine behavior.

As an illustration, consider an intriguing study of the attitudes and expectations of couples who were experiencing the birth of their first child. Each couple was interviewed within 24 hours of the birth of their child. Half the infants born to these couples were boys and half were girls. All infants were carefully matched for physical size so that there would be no obvious differences between the boys and girls. The parents were asked simply to describe their baby as though they were talking to a close friend or relative. Although the infants were physically quite similar, both mothers and fathers described their daughters as little, pretty, soft, and inattentive, while their sons were described as big, strong, active, and alert (Rubin, Provenzano, & Luria, 1974). Thus, these first-time parents viewed their sons and daughters in markedly different ways.

Most parents, though certainly not all, socialize boys and girls in a traditional fashion throughout childhood. For example, in providing play materials for their children, parents are likely to give more sports equipment, more toy animals, and more educational toys to boys, while girls receive more dolls and other domestic toys (Rheingold & Cook, 1975).

Parents are also more likely to orient boys toward professional careers and to stress the importance of academic achievement for boys, particularly in the areas of math and science (Block, 1983, Eccles, 1985). In general, parents point boys toward activities that promote risk taking and independence, while girls receive subtle encouragement to be more conforming and accepting. Several investigators have found that parents are more apt to promote venturesome activities in boys, such as playing on their own after school (Huston, 1983; Ruble, 1984).

What the social learning perspective has revealed, then, is that many parents socialize their children to adopt traditional gender roles. But parents, of course, do not act alone. Schools, television programs, and peers also provide children with models of what is and is not appropriate masculine and feminine behavior.

The Cognitive-Developmental Perspective

Drawing on the work of Piaget, this perspective emphasizes the child's participation in developing both an understanding of gender and a sense of what behavior is appropriate for each gender. Lawrence Kohlberg, a well known psychologist whose work on moral development we will discuss in the next chapter, first proposed a cognitive theory of gender-role development (Kohlberg, 1966; Kohlberg & Ullian, 1974).

The essence of Kohlberg's proposal is that during the preschool years children acquire an understanding of the concepts male and female in three distinct stages.

The first stage, known as **gender identity**, occurs somewhere around age 3 when children recognize that they are either male or female. Kohlberg believed that knowing one's gender was an important achievement that helped children understand and categorize their world. But Kohlberg hypothesized that the 3-year-old's knowledge of gender was fragile. At this age, the child does not realize that boys invariably become men and that girls always become women. Then, between the ages of 4 and 5, children enter a new stage known as **gender stability**. Now children understand the reality of gender. They know, for example, that girls and not boys become mommies. Still, there are limitations. At this stage, children rely on superficial signs-the length of someone's hair or whether they wear pants or a dress to determine gender.

Not until children reach the stage of **gender constancy**, somewhere between 6 and 7 years of age, do they realize that gender is immutable. Now children recognize, for example, that a girl is still a girl even if she dresses in a cowboy outfit or joins a Little League baseball team. Kohlberg's theory is provocative. He suggests that the child's understanding of gender roles is fundamentally a cognitive process.

Children should not begin to show a preference for the behaviors and attitudes of their own sex until they have a firm sense of gender. In other words, children must grasp the concept "I am a boy" or "I am a girl" before they begin to adopt male or female attitudes and behavior patterns.

To test this hypothesis, psychologists have constructed experiments like the following. A group of 4- to 6-year-old children were first asked a series of questions to determine their awareness of the stability and constancy of gender. For example, the experimenter asked a young girl, "When you grow up, will you be a mommy or a daddy?" or "If you played football, would you still be a girl?" Answers to these questions were used to rank the children as having either a well-developed or a poorly developed sense of gender. Later, these same children watched a commercial that showed a child of the opposite sex playing with a gender-neutral toy (a movie viewer).

After the commercial, the children were given the opportunity to play with a group of toys that included the movie viewer they had seen in the commercial.

If the cognitive-developmental theory is correct, children with a well-developed sense of gender should avoid playing with the movie viewer because the commercial identified it as a toy appropriate for members of the opposite sex. Children with a poorly developed sense of gender should not be influenced by the commercial. This is precisely what happened. The children with a well developed sense of gender played very little with the movie viewer and later told the experimenter that it was meant for members of the opposite sex. But those with a poorly developed sense of gender played happily with the movie viewer (Ruble, Balaban, & Cooper, 1981).

Thus, as Kohlberg's theory would predict, cognitive factors influence the gender-role play of young children. However, the theory would also predict that before children achieve gender constancy, there should be little or no expression of gender-appropriate behavior. This is clearly not true. Even in infancy, boys are more physical and

aggressive than girls, and as early as 2 years of age both sexes show a preference for stereotypic male or female toys (Huston, 1983; Maccoby & Jacklin, 1974). These findings are difficult for Kohlberg to explain because in his theory gender-role awareness should not begin until well after age 3.

Today, many psychologists believe that no single perspective is sufficiently broad to account for the current evidence on genderrole development. They propose that what is needed, instead, is a combination of social learning theory, which emphasizes the effects of modeling and reinforcing stereotypic male and female behavior, and a cognitive perspective, which emphasizes the gradual development of gender concepts (Bem, 1985). Such a combined theory can then account for both the early influence of parental sex typing and the way in which children integrate genderrole knowledge into their developing ideas of male and female behavior.

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Adolescence, Adulthood, and Aging

We can state the central thesis of this chapter quite simply: development is a life – long process. Meaningful change begins but does not end in childhood. The adolescent, adult, and later years are an important time for the development of thoughts, feelings, and behaviors.

Such a thesis may seem so straightforward as to be a psychological truism, but in reality it is a relatively new idea. Only recently have psychologists seriously entertained the notion of development seriously entertained the notion of development beyond the childhood years. In the past, psychological theories have regularly assumed that a nearly irrevocable course of development was established in childhood. The view prevailed that what happened beyond childhood, particularly in the adulthood years, was largely a function of life's early experiences.

This idea – what we might call the primacy of childhood development – led to a commonsensical but incorrect notion. Psychologists assumed that beyond childhood life became increasingly regular and predictable: in adolescence, people rebel; as young adults, they marry and have children; in middle age, they reach the peak of their careers; and in old age, they retire and live sedate and lonely lives.

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However, the idea that adulthood is so predictable does not square with a sizable body of research on postchildhood development. Indeed, psychologist Bernice Neugarten, who has conducted an intensive study of over 2000 adults, argues that just the opposite is true. She writes:

Chronological age is becoming a poorer and poorer predictor of the way people live. An adults' age no longer tells you anything about the person's economic or marital status, style of life, or health. Somewhere after the first twenty years, age falls away as a predictor.

Recognizing that development continues beyond the childhood years, psychologists have begun to study the adolescent and adult years more intensely. Research in these areas has often confirmed Neugarten's point that there is greater diversity and vitality to post-childhood development than previously recognized. The elderly are one

example. What happens beyond age 65, the traditional entry into old age, is rather difficult to predict. In fat, unless they are suffering from ill health, an elderly population is likely to show more variability than a group of 18 – year – olds. Retirement provides one example. Retirement from a full time job is common in old age, but even here diversity is noticeable. Some retirees begin part time work in a new field, some engage solely in leisure activities, and some return to school. The belief that the elderly are a homogenous group is stereotypic rather than factual.

Old age is, of course, but one example of postchildhood development. We will also consider the period of adolescence as well as the periods of young adulthood and middle age. Often we will examine these periods separately, but where possible we will show the relationship between periods. What is important to bear in mind is that we are studying the human capacity for change throughout the adolescent and adulthood years.

Adolescence

Adolescence can be loosely defined as the time between childhood and adulthood. However, not all societies recognize adolescence. Some non – Western cultures, for example, have no distinct period to mark the transition from childhood to adulthood. Children simply assume what responsibilities they can as early as possible and eventually become independent of their parents.

At the outset, then, we should recognize that adolescence is not a universal state. Rather, it is an invention of modern industrial society, with its need for a slow transition between the carefree childhood years and the complex responsibilities of adulthood. In most industrialized societies, young people a specialized set of skills. They must also acquire the emotional maturity to make personal decisions on their own. These first steps toward adulthood are accomplished in adolescence.

Perspectives on Adolescence

Adolescence is usually defined as the period that begins with the onset of puberty and ends somewhere around age 18 or 19. Several distinct physical changes signal the onset of puberty, principally menstruation in the female and the production of sperm in the male. Changes in height and shape of the body are also signs of pubescence.

These physical changes can occur anywhere between the ages of 10 and 18, though puberty typically begins between 11 and 13.

But adolescence is more than a time of rapid physical development. It is a time of adjusting to a strange and unfamiliar body, of new relationships with members of opposite sex, and of emerging intellectual powers. How well adolescents adjust to these changes is a matter of some debate. G. Stanley Hall, a pioneer in the study of post-childhood development, referred to adolescence as a period of great “storm and stress”. Hall believed that the teenage years, filled with youthful idealism and concerns about sexual development, were destined to be a turbulent period. Many other psychologists have agreed with Hall, pointing to interview studies that support the connection that the teenage years are stressful. In one of these studies, 30 – year – old adults reflected on their life experiences in an open – ended interview. A large proportion of these subjects remembered their adolescent years as a time of confusion and despair. They spoke of conflicts with parents, anxiety about scholastic

performance, and pressures for peer recognition.

Yet, other psychologists remain unconvinced that adolescence is a uniquely trouble some period. They cite research showing that the majority of adolescents do not encounter serious problems in personal adjustment, nor do they hold sharply negative attitudes toward their parents. These investigators have concluded that the image of the troubled and confused adolescent is erroneous and misleading. In their research, the typical adolescent, even in the stormy period of the was actually quite well – adjusted.

These conflicting opinions may result from the different ways that adolescents respond to the physical and psychological changes of the teenage years. Some will react by challenging and testing authority, while others will choose a relatively smooth course. Whatever the outcome, we can be certain that all adolescents are responding to a myriad of physical, cognitive, and social changes.

Physical Development

The first clear sign of the transition from childhood to adolescence is a marked change in height and weight known as the growth spurt. In girls, the growth spurt usually begins around age 10 ½ reaches its peak at age 12, and begins to slow around 13 to 13 ½ years. Boys have a similar two – to three - year spurt, but it generally occurs later. Typically, boys begin to spurt around 13, peak at 14, and then return to a slower rate of growth for the next year or two. While these ages represent rough averages, the timing of the growth spurt varies considerably from one person to the next. Girls may begin to spurt as early as 7 ½ or as late as age 12, while some boys begin to grow rapidly at 10 ½ and others as late as age 16.

The growth spurt occurs about the same time as the development of primary and secondary sex characteristics. The development of **primary sex characteristics** refers to the maturation of the reproductive sex organs that make sexual union and procreation possible. In girls, this means rapid development of the ovaries, uterus, and vagina, while in boys it refers to the development of the testes, scrotum, and penis. Mature uterine development in girls is also accompanied by **menarche,** or the

beginning of the menstrual cycle. However, the onset menstruation is quite variable, occurring anytime between the ages of 8 and 18.

Adolescents are aware of the development of primary sex characteristics, but they are morel likely to take note of the appearance of **secondary sex characteristics,** the visible physical characteristics, other than genitalia, that distinguish the mature male and female. These include the enlargement of breasts, widening of the hips, and development of pubic hair in girls. Beards, pubic and chest hair, and change of voice occur in boys.

The timing of these physical changes in an important psychological variable. Boys, for example, have a distinct advantage if they experience an early pubescence. They become physically stronger and more athletic than their slower – maturing classmates, and they tend to develop a considerable degree of poise and self – confidence in their social activities. Boys who mature early are highly regarded not only by their peer but even by adults. But for girls, the consequences of early pubescence are more

consequences of early pubescence are more complex. Changes in the height and shape
of the body sometimes interfere with early social adjustment, particularly if the girl suddenly becomes sexually attractive. This problem tends to diminish, however, as girls grow older. Girls who mature early have an advantage in social situations by the time they reach the pre – high – school years.

Cognitive Development

In adolescence, we see the emergence of new powers of thought. Adolescents can reason abstractly, develop hypotheses about complex situations, and even reflect on their own thinking. These new – found intellectual skills often dispose adolescents to question exiting moral and social values. Often, ideals are high as adolescents ponder how the world might be. As much as any other period in life, adolescence is a time to question and challenge the status quo.

Moral Reasoning

Moral reasoning is an integral part of human development. Beginning in childhood, parents seek to instill moral values. How these values develop and change is a question that has intrigued psychologists for many years. While parental attitudes are no doubt important, several prominent psychologists have suggested that moral reasoning is tied closely to cognitive development. Thus, during adolescence, when intellectual powers are reaching their peak, we would expect to see major changes in moral reasoning.

Piaget's Theory of Moral Reasoning. Jean Piaget, the cognitive – development theorists whom we discussed in chapter 10, was the first to propose a link between the way people think and their ability to reason about moral dilemmas. Through his interviews and conversations with children, Piaget observed two stages in the development of moral reasoning. The first, which occurs during the preoperational period, is called **moral realism.** In this stage the young child believes that rules are sacred and unchangeable and that those who violate sanctions must be punished according to the magnitude of their offense. Thus, to a 6-year-old, stealing 10 cookies is much worse than stealing 2 cookies. But during the concrete operational period,

children shift toward **autonomous morality** or the **morality of cooperation.** A child in this stage believes that rules and regulations are the product of social agreement rather than sacred and unchangeable laws. Such a child will also consider the motives behind someone's actions and not just the consequences of the offense. Thus, stealing cookies to give to a hungry friend is different from sneaking a forbidden dessert.

In sum, Piaget emphasized the children's thinking influenced their moral judgments. He noted that while preoperational children consider only one dimension of a moral dilemma, concrete operational children consider two dimensions – the motives and the consequences of the offender's actions. Thus, Piaget's research established a definite link between thinking and morality.

Kohlberg's Theory of Moral Reasoning. Piaget conducted his research on moral reasoning in the early 1930s. For many years, this issues lay dormant until Lawrence Kohlberg conducted a seminal study of moral reasoning in 7 – to 16 – year – old boys. Like Piaget, Kohlberg saw a relationship between cognition and moral judgments.

However, Kohlberg believed that there were six different levels to moral reasoning. Kohlberg's method was to ask his subjects to listen to a series of stories involving a clear moral dilemma. After each story, the subjects would answer questions which forced them to choose between obedience to rules and concern for the welfare of others. The stories, though hypothetical, often portrayed gripping personal problems. Imagine you are one of Kohlberg's subjects as you read the following story:

In Europe, a woman was near death from cancer. One drug might save her, a form of radium that a druggist in the same town and recently discovered. The druggist was charging $2000, 10 times what the drug cost him to make. The sick woman's husband, Heinz, went to everyone he knew to borrow the monkey, but he could only get together about half of what it cost. He told the druggist that his wife was dying and asked him to sell it cheaper or let him pay later. But the druggist said, "No." The husband got desperate and broke into the man's store to steal the drug for his wife. Should the husband have done that? Why?

After beginning to this story, Kohlberg's subjects answered a series of questions, such as, "Should Heinz have taken the drug?" and "What was right or wrong about what he did?" Kohlberg was interested not in whether the incident was judged right or wrong, but in the reasons subjects gave for their decisions. Based on their responses to this story and several other moral dilemmas, Kohlberg determined that there were six stages in the development of moral reasoning. He grouped these stages into three broad levels of moral development.

Kohlberg's found that the moral judgments of children who were roughly 7 years olds conformed to the premoral level. These children evaluated actions in terms of their consequences. They felt people should obey rules in order to avoid punishment. However, the somewhat older stage – 2 subjects were more selfish and more oriented toward were more selfish and more oriented toward their own pleasure. At this stage, children believed that acts were morally acceptable if they were personally gratifying. But Kohlberg observed that the age 13, or roughly the beginning of adolescence, there is a shift to the morality of conventional role conformity. This change is due in large

measure to the greater cognitive skills of adolescents, who were better able to judge and evaluate the world around them. At Level II, young people first become concerned with obedience to authority in the hope that others will approve of their actions. That is what Kohlberg called the stage of "good boy" morality. However, this stage soon gives way to a respect for authority and a genuine concern with maintaining social order. During stage 4, adolescents often talk about the importance of duties and obligations and stress the value of maintaining social order for its own sake.

The third level of Kohlberg's theory, the morality of self – accepted principles, is closely tied to the development of formal operational thinking. People who reach the level must demonstrate an awareness of highly complex and abstract ethical principles. However, as Piaget observed, not everyone is capable of formal operational thought, a fact which led Kohlberg to conclude that many people will not achieve Level III. Those who do reach Level III first subscribe to the value of democratically accepted laws and agreements. At this stage, people recognize that

laws may sometimes be unjust or arbitrary, but they that in the long run society benefits from adherence to democratically agreed – upon principles. However, in stage 6 there is a notable shift toward individual principle of conscience. People who reach this stage are keenly aware of the importance of laws and social customs, but they balance these obligations against their understanding of the civil and moral rights of individual citizens.

Challenges of Kohlberg's Thoery Kohlberg, like Piaget, views moral development from a cognitive perspective. He speaks of adolescent becoming "moral philosophers" and he believes that advancement through the stages of moral development is closely tied to the progression from concrete to formal operational thinking. To underscore his cognitive developmental perspective, Kohlberg and his associates point to a recently completed 20 – year study in which subjects proceeded through the stages of moral development in the hypothesizes sequence, with no subject ever skipping a stage.

However, Kohlberg's perspective has not received universal acceptance. Other psychologists believe that moral judgments are influenced by social as well as cognitive factors. They note that the rewards and punishments dispensed by parents, the values of the peer group, and even the type of television programs watched are factors that contribute to moral standards.

But perhaps the most crucial issue in the study of moral development in the relationship between moral judgments and moral behavior. Kohlberg measures what people say they will do in certain hypothetical situations, not what they actually do. This raises the serious question of whether the resolution of actual, "real – life" moral dilemmas is related in any meaningful way to the answers people give to Kohlberg's stories. While Kohlberg acknowledges a potential problem, he points to studies that show that an individual's moral judgments are a strong predictor of his or her actual behavior in ethically difficult or ambiguous situations. Nevertheless, other psychologists are either skeptical or unconvinced, and they suggest that the potential discrepancy between moral judgments and moral behavior is a serious problem for Kohlberg.

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Finally, Kohlberg's critics have raised the question of bias. Does Kohlberg's theory implicitly assume that a certain a kind of moral reasoning in superior? Some researches believe this is so. They note that Kohlberg's postconventional stages (5 and 6) are usually found only among the well – educated members of industrialized countries. Could it be that Kohlberg's stages represent a particular kind of moral reasoning, as opposed to universally accepted moral principles?

Most certainly, according to Kohlberg's colleague Carol Gilligan. In her recent book, In a Different Voice, Gilligan criticized Kohlberg for constructing a theory based on an all-male sample. Noting that women rarely attained the highest level in Kohlberg's system, Gilligan began her own studies of moral reasoning. She compared the views of men and women on a series of moral and ethical problems, such as whether women should have the right to an abortion. These studies convinced Gilligan that men and women often differ in their conceptualization of moral problems. Women demonstrate a "morality of caring" that is characterized by a concern for the feelings of others and

the relationships between the principals in a moral dilemma. While such reasoning might lead Kohlberg to place women at the conventional level of moral development (stages 3 and 4 which emphasize social concerns), Gilligan believes this is not a deficiency in women. Rather women are demonstrating a different kind of moral reasoning that contrasts with the “morality of justice” often exhibited by men. The deficiency lies not in women, but in Kohlberg’s failure to detect the full range of moral reasoning.

So there is both consensus and disagreement about kOhlberg’s theory. The point of agreement is that cognition influences the development of a series of stage of moral reasoning. However, these stages may have cultural determinants and do not appear to be universal. Furthermore, there is a real question about whether moral reasoning is consistent with moral behavior.

Insight and Judgment

One conclusion from the research on moral development is that adolescents are capable of complex thought. Moreover, by virtue of schooling and disposition, adolescents often find themselves pondering and debating major social and political issues. Should there be a legal drinking age? Are nonprescription drugs harmful? Is premarital sex wrong? With great passion and a probing intellect, adolescents debate these issues endlessly. And as many a parent can ruefully attest, adolescents have both

the logical ability to detect inconsistencies in other people’s arguments and the moral conviction to point them out.

But there is a compelling paradox here. This clear – headed, logical thinker often acts irrationally, even to the point of self – injury or death. Recent data compiled by the National Institutes of Mental Health reveal the adolescents are the only age group in which morality rates have risen since 1960. More importantly, the great majority of these deaths could be prevented. Accidents, homicide, and suicide account for roughly 75 percent of all deaths in adolescence. As psychologists Lewis Lipsitt observes, adolescents are “dying of their own reckless behavior”.

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What would prompt adolescents to behave this way? One reason is that risk taking seems to be a natural component of the teenage years. Adolescents often maintain an unrealistic sense of their own vulnerability. They believe that little enduring harm will come their way. Death and disability is something for older people to worry about.

Even more curious, however, is the tendency for adolescents to assess incorrectly the likelihood that misfortune will befall them. For example, researchers have found that when adolescents are asked to predict whether certain outcomes become more or les prevalent over time, they erroneously conclude that risks such as pregnancy following unprotected intercourse, or addition from drug abuse, are less likely to occur. That is, contrary to known facts, adolescents assume that if tragedy does not occur the first time, it is unlikely to occur later. The recent deaths several star athletes from cocaine intoxication seem to illustrate this point.

From a cognitive standpoint, the adolescents is something of a paradox. While the teenage years bring new – found cognitive skills, including the ability to engage in sophisticated moral and political arguments, there is also evidence that personal needs

cloud the adolescent's ability to evaluate many social risks. Insight and judgment do not seem to go hand in hand during adolescence.

Social and Personality Development

Perhaps the most important task facing a teenager is establishing a strong sense of self to cope with the many changes that surround the adolescents years. In psychological terms, this is known as establishing an identity. But at the same time that adolescents search for their own identity, they must also manage relationships with both their parents and their peers. Relationships with parents change throughout life, but they are particularly interesting during the teenage years when parental influence is rivaled by peer influence. Peer relationship, for their part, add new dimensions to personal growth during the adolescent years. Heterosexual friendship develops, and adolescents confront an awareness of their own sexuality.

All of these changes contribute to the personal and social development of the adolescent. To understand this process, we will look at four major components: (1) identity formation, (2) relationships with parents, (3) relationships with peers, and (4) sexuality in adolescence. We will conclude with a discussion of one of the consequences of sexuality in adolescence, teenage pregnancy.

Establishing an Identity

Two prominent theorists have stressed the importance of developing a clear and independent sense of self during the adolescents years. One was Sigmund Freud, who emphasized that adolescents must reduce their dependency on parents and begin to function autonomously. He predicted that this change would not occur smoothly, and that parent child conflicts would inevitably result. The other is Erik Erikson, a prominent personality theorists whom we encountered briefly in chapter 10. Erikson, in his extensive writings about the adolescent's search for identity, suggests that identity formation is really the fifth stage in a theory of personality formation that extends from birth to old age.

Erikson postulates eight stage in personality development. Each stage is focused on a particular interpersonal relationship and involves a crisis or conflict. Erikson envisions two possible outcomes to the conflict at each stage, one of which promotes for greater personal adjustments than the other. In the first stage, for example, infants discover through relationships with their parents that their environment is either basically safe and secure, or threatening and insecure. It is important to note that the outcome at each stage is not irreversible. According to Erikson, a child who is treated in a harsh and inconsistent manner in infancy can experience a normal adulthood if he or she receives a great deal of affection and are in the later stages of life.

In adolescence, the fifth stage in Erikson's developmental scheme, the conflict is between the formation of a new identity and **role confusion,** or the failure to synthesize past experiences and develop a clear and consistent sense of self. Why should adolescence prompt a search for identity? Erikson believes that the sudden biological changes of puberty, the awakening of sexual desires, and the formation of new values and beliefs trigger the identity crisis. He detects in adolescents a need for continuity when the past, yet at the same time as intense concern for what lies ahead – jobs, careers, and new interpersonal relationships. For Erikson, this delicate task of

balancing the past and the future gives rise to the fundamental question that defines the identity crisis, “Who am I and where am I going?”

Erikson sees a number of difficulties associated with the fifth stage of personality development. He suggests that if adolescents fail to synthesize past experiences with future expectations, no clear resolution of the identity crisis in possible. Instead, role confusion can take several forms. Sometimes it is manifested in aimless drifting through a series of occupational and social roles. But it can also have more serious consequences, leading the adolescent into delinquent or abnormal behavior. Erikson refers to this type of role confusion as the formation of a **negative identity,** the choice of those adolescents who, unable to resolve successfully the identity crisis, adopt an extreme position – delinquency, drug abuse, or even suicide – that sets them apart from the crowd. They find this preferable to the loneliness and isolation that comes with the failure to achieve a distinct and more adaptive role in life.

Erikson formulated his theory of psychosocial development many years ago, and without the benefit of systematic research. What have subsequent studies revealed? James Marcia classified adolescents in terms of their resolution of the identity crisis. He developed four different “status” categories which characterizes the search for identity: (1) achievement status, when an individual has resolved the identity question and is committed to a particular course, (2) moratorium status, when an individual is still searching and experimenting, (3) foreclosure status, when an individual has avoided the identity crisis by aligning completely with his or her parents, and (4) identity diffusion status, when an individual is totally absent of direction or commitment. Unlike Erikson’s stages, however, Marcia’s identity statuses are not necessarily progressive. One individual might fall just short of achievement status, another might never move beyond identity diffusion. Marcia and his colleagues (Constantinople, 1969; Marcia & Freedman, 1970), in their research with college students have found that during the college years there is a tendency to move from identity diffusion to identity achievement. Even within a single school year, some students show considerable movement toward the achievement status.

These result lend empirical support to Erikson’s views on adolescence. However, other psychologists have raised specific questions about the difficulty of assessing the status categories which Marcia has described as well as more general objections to the sweeping nature of Erikson’s theory. They note that Erikson formulated his opinions based on observations of a restricted group of individuals (largely middle – class, white males), and that the theory must be understood within that context. Carol Gilligan, who criticized Kohlberg for making broad generalizations about moral development, has levied a similar charge against Erikson. Erikson assumes that adolescents want to forge a separate identity, but Gilligan believes that this is more characteristic of males than females. Females are more interested in developing warm and nurturing relationships and less interested in the ideal of separateness. Thus, Gilligan sees a common error in both Erikson’s and Kohlberg’s theories – the tendency to promulgate universal stages in the absence of confirming data.

Relationships with Parents

Parents are very significant people in the lives of most adolescents, in part because

they control important resources. Parents may dispense or withhold money, set limits on the adolescent's social life, and establish rules of governance for the household. But relationships with parents are perhaps most important for reasons that have little to do with control. Parents provide stability for lives that are encountering many changes. Not surprisingly, the parent – adolescent relationship is one factor that determines how the adolescent will resolve the identity crisis. In interview studies, adolescents who report a positive relationship with both parents usually develop a strong sense of who they are. Self-assured and independent adolescents are likely to have parents who encourage open discussion of issues related to their children's personal and social lives.

As one would expect, parents and adolescents do not always see eye to eye. But how serious are their conflicts? Although popular stereotypes of adolescence suggest that this is a period of frequent disagreement with parents, there is probably far les conflict than we have been led to believe. National surveys repeatedly show that roughly 65 percent of the adolescents in the United States and 70 percent of their parents do not believe there is a "generation gap". Even during the tumultuous period of the late 1960s, when youthful counter-cultures were emerging, few differences in ideals and values were detected in the self report statements of parents and adolescents. On the contrary, the great majority of adolescents hold social, religious, and political views that are quite similar to those of their parents, and report that they have a warm and affectionate relationship with their parents. The one area where parents and adolescents are most likely to disagree in on the topic of conventional morality. Here, investigators detect disagreement over attitudes toward drug use, obscenity, and sexual permissiveness.

Relationships with Peers

In childhood, parents are typically the sole reference point for ideas and values. In adolescence, though, the peer group competes with the parents for this role. Because parents and adolescents are not likely to agree on all personal and social matters, psychologists have inquired about the relative influence of peers and parents on the values and beliefs of the adolescents.

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There is little question that adolescents have a strong orientation toward their peers, but peer influence is nonetheless somewhat restricted, Psychologists have consistently found that peer influence is greatest in matters of personal taste. Peers are likely to shape the adolescent's preference for music, fashion, recreation, and choice of friends. However, if conflict exists between parental and peer attitudes over basic moral and social values, adolescents are likely to side with their parents.

This is not to say that peer influence is trivial. In one study of the use of psychoactive drugs, adolescents were far more likely to bow to peer rather than parental pressure. Among adolescents whose parents smoked marijuana but whose friends did not, only 17 percent used the drug themselves. However, among subjects whose parents abstained but whose close friend smoked, 56 percent reported using marijuana or other psychoactive drugs. By high school age, the number of friends who smoke marijuana is the single best predictor of whether an adolescent will begin to use it. Kandel's research raises the important issue of conformity to peer group during the

teenage years. One hypothesis psychologists have investigated is that adolescents are generally fearful o standing too far apart from the crowd. Research on conformity has generally confirmed this hypothesis, demonstrating that conformity to the peer group rises throughout the childhood years, peaks in early adolescence, and then declines. In one interesting demonstration of this point, subjects from the third, sixth, ninth, and twelfth grades listened to hypothetical stories like the following about antisocial behavior.

You are with a couple of your best friends on Halloween. They're going to soap windows, but you're not sure whether you should or not. Your friends say you should, because there's no way you could bet caught. What would you really do?

Following the presentation of each story, the subjects indicated what they would do in each situation. Demonstrate, conformity to peer pressure rose steadily from the third to the ninth grade and then declined with the oldest subjects.

We see, then, that parents and peers exert different influences during the teenage years. Adolescents typically model their parents' views on social, political or religious matters, but they are likely to follow their peers in matters of personal taste and conventional morality. Neither parents not peers can lay exclusive claim to influence over the adolescent.

Sexuality in Adolescence

The development of same and opposite sex friendships is a major event during adolescence. Investigators have found that these friendships often begin in the security of same sex cliques, which vary in size from three to nine members. Gradually, these cliques broaden to include members of both sexes, from which the traditional heterosexual dating partners emerge sometime later.

As friendships develop during the teenage years, adolescents are teaching sexual maturity. What effect does this have? Clearly, there is a possibility that adolescents

will engage in sexual activity. Just what kind and how much seems to vary from one generation to the next.

Large – scale surveys indicate that in recent years many adolescents have been sexually active. While most of this activity is heterosexual, homosexual contact is not uncommon. Approximately 14 percent of boys and 11 percent of girls report some homosexual experience before the age of 15. however, a good deal of homosexual contact appears to be experimental and does not lead to a lasting homosexual orientation. For example, among adults only 4 percent of males profess to be exclusively homosexual.

Heterosexual activity among adolescents seems to be increasing. In Alfred Kinsey's famous study, conducted almost 40 years ago, 45 percent of males and 20 percent of females reported engaging in sexual intercourse before age 20. By 1973, the comparable figures reported by males and females were 59 percent and 45 percent, respectively. Since then, investigators have found a steady increase in rates of sexual intercourse among females, with one survey reporting 70 percent of females having intercourse before age 20.

While sexual activity among adolescents is increasing, it may not be without some cost. Investigators have found that a sizable percentage of teenagers have negative

feelings about sexual experiences, particularly their first. This seems to be particularly true for girls. One survey found that only 25 percent of teenage girls reported feelings of excitement about their first act of intercourse, while 63 percent said they were afraid. Although only 17 percent of boys reported experiencing fear, less than 50 percent said they were excited about their first sexual encounter.

Teenage Pregnancy

It is ironic that, despite the increase in sexual activity in today's adolescents, many are unaware of the risk of pregnancy associated with sexual intercourse. Even with advances in birth – control methods, approximately 10 percent of teenage women in the United States – more than 1 million girls – become pregnant each year (National Center for Health Statistics, 1977). Over two thirds of these pregnancies are unintentional and unwanted and can cause real hardship for those involved. The result is that thousands of teenagers face the difficult choice of giving birth to a child our of wedlock or terminating the pregnancy. Both options are exercised frequently. One third of all abortions in the United States are performed on teenage women, and more than 11 million teenagers give birth each year.

At first glance, the frequency of teenage pregnancy s perplexing because contraceptives are in more widespread use than ever before. Nevertheless, adolescents fail to use contraceptives for two main reasons. One is that teenagers are sometimes remarkably unaware of how conception occurs. Many simply do not understand how fertility is related to sexual intercourse and a woman's menstrual cycle. A second major reason is that many adolescents do not have adequate access these devices. Contraceptives such as the birth – control pill or the IUD are available only through medical facilities, and many adolescents feel inhibited about approaching these institutions.

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A number of problems are associated with teenage pregnancy, many of them related to poor nutrition and inadequate medical care. Teenagers are not as likely as older women to seek or receive adequate prenatal. Inadequate medical attention may contribute to the medical problems of adolescent women, who encounter such problem far more frequently than do women in their 20s and 30s. for example, a pregnancy in adolescence is more than twice as likely to result in physical complications, or even the death of the mother, than is a pregnancy in women between the ages of 20 and 40. Inadequate prenatal care may also place the infants of teenage mothers at greater risk than the infants of older mothers. More than twice as many deaths occur among the infants of mothers ages 10 to 14 as compared to the infants of mothers aged 20 to 25.

However, it is important to focus on the correlates to teenage pregnancy, not the age of the expectant mother per se. Several studies have shown that teenage women who receive adequate prenatal care actually have fewer complications than older mothers. What seems to place teenagers at particular risk is the type of social and medical support system available during pregnancy.

Adulthood

It is difficult to pinpoint precisely when adulthood begins. Most experts speak of age 20 as the approximate starting point, but age by itself is an imperfect landmark.

Rather, the transition from adolescence to adulthood is defined by important psychological events. Two well – known theorists, Freud and Erikson, chose similar psychological criteria when characterizing the adult personality. To Freud, an **adult** was someone who could assume the responsibility of daily work and committed love. Erikson spoke of intimacy and generativity in defining adulthood, by which he meant something very close to the capacity for work and love. It is possible, of course, to choose other criteria, but most experts would agree with the psychological focus on adulthood as a period of maturity and responsibility in the vital areas of work and love.

Physical Development

In the young adults years, we reach the peak of our physical abilities. Strength, coordination, agility, and speech all peak before age 30. In most sports, athletes attain their maximum levels of skill and efficiency during their 20s. unless illness intervenes, we are at the height of our physical health and endurance in early adulthood.

While the peak of physical health occurs before age 30, declines from the peak are usually gradual. Most people experience only a slow decline until age 50, when physical changes becomes sharper and more easily perceived. Furthermore, we now know that personal fitness (diet, exercise) can help sustain physical vigor throughout the adult years, providing each of us with some measure of control over our body's response to growing older.

Nonetheless, eventually we all experience at least some of the telltale signs of aging graying hair, wrinkled skin, unflattering weight gains, and loss of physical stamina. How people react to these signs of aging is apparently due in part of their sense of

self. One investigator found that people who derive their self – worth primarily from the condition of their bodies (such as models, athletes, and dancers) tend to feel old as soon as their physical attributes, such as intelligence or wit, tend to feel young and vigorous long after their bodies lost their youthful appearance.

Changes in physical appearance are but one sign that the body is growing older. For women, **menopause,** or the cessation of the menstrual cycle, is a more definitive sign. Menopause is a rather abrupt physiological change, brought on by a reduction in the hormone estrogen, that renders women infertile and is sometimes accompanied by physical symptoms such as hot flashes and sweating. There is no direct parallel to menopause in men. Men do experience a gradual decline in sperm production, but this does not make them infertile, nor is it accompanied by any physical symptoms.

Although menopause has achieved widespread recognition as a period of great emotional difficult for women, research has shown that the psychological consequences of menopause are actually quite variable. While some women experience emotional problems such as anxiety, irritability, or depression, statistics do not support the cultural stereotype of menopause as a universal time to great upheaval. Roughly 60 percent of middle-aged women experience hot flashes – sudden feelings of heat throughout the body followed by chills. However, this physical symptom is the most common experience among women who report difficulties with menopause. Roughly, one in five women encounter no menopausal symptoms at all. In general,

menopause does not seem to create significant emotional problems for women, nor does it lead to a significant decline in sexual desire.

Cognitive Development

We hear little about cognition during the adult years. While it is commonplace to read about dramatic advances in cognitive development during infancy and childhood, you would probably be hard – pressed to recall the last time you read about progress in learning, memory, and language among adults. Is this because there is no progress? Do we merely "hold on" during the adult years, trying to fend off the inevitable decline in cognition? Or is adulthood simply a forgotten period in the development of reasoning and problem solving?

Problem Solving

Contrary to popular belief, adulthood appears to be a time when existing cognitive skills are consolidated and sharpened. In contrast to adolescence, when personal and social concerns sometimes cloud cognitive judgments, adulthood is typically a period when abstract thought and rational thinking dominate. There is evidence that metacognitive

skills – the ability to monitor and evaluate one's thinking and reasoning – actually improve in adulthood. The capacity to plan, evaluate, and be reflective may well peak in adulthood.

Learning and Memory

Judgment and reasoning may excel during adulthood, but what about new learning? Do adults maintain the capacity to acquire novel information? Throughout most of the adult years, there appears to be little decrement in learning. Even when the material is

not particularly relevant, such as learning the association between nonsense syllables, adults subjects perform well. However, elderly subjects, in their sixth and seventh decade, do show some declines when the material becomes more difficult. The elderly are also likely to demonstrate a lower level of abstraction in a game such as 20 Questions (Denney, 1979). But these "negative" findings may be due in part to greater caution and anxiety among older subjects, particularly when they are asked to deal with laboratory – type problems. In any event, we should recognize that as people grow older, they do not experience a general decline in the ability to learn new material.

Memory follows a similar course. There is no general decline in memory during the adults years, memory is a complex process. There are different types of memories, such as short – term and long – term, and different ways to measure what people remember. One such distinction is between recall and recognition. For example, if you were to take the next 5 minutes to write down the names of people in your highschool graduating class, you would be engaged in recall test. Alternatively, if you were to look at a large number of pictures of 18-year-olds, some of whom were members of your graduating class, and then try to determine which people actually were in your class, you would be engaged in a recognition test. Why is this distinction important? Some investigators have found that while there is little change in recognition memory during adulthood, recall memory declines in the later adults years.

But this generalization also needs qualification. Memory decline is neither pervasive nor incapacitating during adulthood. In fact, memory loss usually occurs on experimental, laboratory tasks that are not directly related to everyday life. There is no indication that memory loss impairs either personal or professional responsibilities during the adult years.

Social and Personal Development

We noted earlier that psychologists believe the adult years are characterized by two consuming interests: work and love. During adulthood, people make important decisions about jobs and careers, whether to marry, and what type of family life is mot satisfying. There are not trivial decisions. Most people will spend the better part of their adult years dealing with these basic issues.

Marriage and Family Life

Perhaps the most important life – style decision of adulthood is whether to marry. Although we often hear that marriage is on the decline, surveys show that by age 35 nearly 95 percent of adults have married at least once. Furthermore, among those who marry and divorce, remarriage remains a popular choice. Marriage, for all of its trails and tribulations, is very compelling to most adults.

How do people choose a marriage partner? The decision is a complex one. It appears to evolve as people pass through a series of stages during which they progressively narrow a potential group of mates. This is sometimes known as a “filtering” process. Some of the potential steps in mate selection according to the filter theory.

Mate selection is a combination of practical and personal decisions. To begin with, people who marry are very likely to have lived near each other for a considerable period of their lives. Extended long-distance relationships are difficult to maintain. Beyond simple proximity, a number of factors determine whether we view someone as attractive. The height, weight, as facial and bodily features of a potential mate are all important. Somewhat surprisingly, age is an exceedingly strong factor is the choice of a marriage partner. In the United States, implicit age norms define an “acceptable” mate. Few young men, for example, will consider marrying women who are more than 3 years their senior. Finally, a group of social and personal factors help us screen potential mates. People who marry are usually quite similar in political and religious beliefs. They are almost universally members of the same social class, that is, they are alike is educational background and their parents are from similar occupational and economic levels. Marriage partners are very likely to share similar hobbies and interests. These are the activities that initially bring people together and later sustain a marriage. It appears, therefore, that the old adage that “opposites attract” does not turn out to be true.

Most couples begin a family shortly after marriage. This may seem surprising because of frequent references in the popular press to childless couples, but surveys show that the vast majority of couples want children and want them early in their marriage. After just two years of marriage, fully two thirds of American women have given birth to their first child.

How can we characterize family life? No simple formula applies. There is really no such thing as a typical family. The “traditional” two – parent family (children living

with their married parents) does exists, but only about 63 percent of families fit this configuration. The rest are divided among divorced couples and their children (roughly 22 percent), remarriages involving one stepparent (10 percent), and families headed by adoptive parents, grandparents, and non-relatives – roughly 5 percent (Committee on Children, Youth, and Families).

Perhaps even more impressive is the changing nature of families. The birth of a child, for example, changes the structure of a family. Research has shown that becoming a parent alters the marital relationship in dramatic fashion. Marital satisfaction may actually decline as parents confront the reality that child rearing is a very time – consuming and exhausting task. However, children are not simply a burden. They are often cited as one of the major sources of satisfaction in a marriage. Furthermore, as children grow older the intensity of child rearing tends to diminish, leaving more time for couples to be involved with each other.

As children grow older, the family structure continues to change. One very significant development occurs when children leave home and parents are confronted with an "empty nest." Contrary to popular opinion, psychologists have discovered that the transition to a life without children is generally pleasant and uneventful. Although parents sometimes miss the day – to – day contact with their children, they do not miss the responsibilities and daily chores associated with child rearing. Women in particular are often pleasantly surprised at the decrease in their daily work, but men also adapt well to the change in family structure. Greater personal freedom and a lessening of financial and childrearing responsibilities seem to outweigh the loss of daily contact with children. In fact, a number of studies whoa a pattern of expressed

marital satisfaction similar to the one presented. Note that satisfaction with marriage reaches its lowest point just before children leave home. But after the point, most couples experience a steady increase in marital satisfaction.

Jobs and Careers

Work is significant dimension of adult life. Adults work for a variety of reason; income, personal satisfaction, and opportunity for social advancement are among the most common. But what people value in their work depends very much on the type of job they hold. Although income consistently surfaces as one of the most important characteristics of a job, it is more highly valued among people who hold low – status position. Research has consistently shown that the lower people are in the occupational hierarchy, the more they value income and job security.

An equally important dimension of job satisfaction is the age of worker. Older people are considerably more satisfied with their jobs than are younger workers. In one study, roughly 75 percent of the workers under 21 expressed satisfaction with their work, but 84 percent of those in their 20s and better than 90 percent of those over 30 expressed similar feelings. One possible explanation for these findings in the greater vulnerability of the older worker to unemployment.

Young adults are active and mobile members of the work force, but older people experience greater difficulty finding new employment commensurate with their training and education. Workers who are unemployed at any age beyond the young adulthood period can anticipate fewer referrals to new employers and less success in

securing a job than their similarly qualified but younger counterparts.
How stable are jobs today? Although people change jobs more frequently today than in the past, radical changes become less likely as workers grow older. Most middle – aged adults prefer to remain with the same employer unless their income is insufficient. One reason for this is that in North America middle – aged workers are becoming increasingly more concerned with the personal benefits that accompany their job. White collar workers, for example, are showing a reluctance to accept promotions that force a relocation of their family. They are no longer willing to make any personal sacrifice for promotion to a higher job.
Apart from the dimensions of work that produce job satisfaction, psychologists have inquired about the variables that influence job selection. Although little is known about why young adults choose a particular firm or industry for their first job, responses to vocational – interest tests provide some clues about who is likely to be most successful in a particular job. A vocational – interest test is a measure of the activities that a person likes or dislikes. Typically, the test consists of several hundred statements describing a wide range of activities, for example, everything from writing a book on economics to freshwater fishing. The respondent must indicate whether he or she likes, dislikes, or is indifferent about the activity described in each statement. From this pattern of responses, a profile is drawn of the individual's work preferences.
Two of the best – known vocational – interest tests are the Kuder Preference Test and the Strong – Campbell Interest Inventory. These tests are quite successful in

predicting who will be happy and productive in a particular ob. For example, research has shown that if workers are divided into two groups, those who stay with their jobs and those who leave, the latter group tends to score lower on the Strong Campbell Inventory for the particular occupation involved. Furthermore, the occupation of those who decide to change jobs is easily predicted from the original scores on the Strong – Campbell Inventory.

The Later Years

At one time, beyond age 65 was a rare occurrence. In 1790, only 2 percent of the United States population was 65 or older. By 1900, this group had increased to only 4 percent. But in 1981, 25 million people, fully 11 percent of the population, was 65 or over. Yet, this was only the beginning of a phenomenal growth in the elderly population. In les than 50 years, by the year 2030, roughly 20 percent of the United States population will be 65 or older.
It is important to understand that what has increased the survival rate of the over – 65 population is not dramatic new advances in genetic engineering, but rather a gradual victory over the illness that imperil a long life. As the incidence of heart attacks, strokes, cancer, and other life – threatening diseases declines, a greater percentage of the population will live to old age. And as an ever – increasing number of people join the ranks of the elderly, psychologists are asking what life is like in the "golden years". What are the rewards and challenges of old age?

Physical Development

There is no question that the body shows signs of weakening in old age. Bones

become softer and more susceptible to fracture, coronary arteries narrow, blood pressure increases, kidney and lung function decrease, and the digestive system is disrupted by gradual deterioration of the intestinal tract. Yet, many old people are in good health and lead active and vigorous lives. How can this be?

The answer seems to lie in understanding the great variability of old age. We noted earlier that the elderly, contrary to popular stereotype, are a very heterogeneous group. Health is one excellent example. While chronic illness limits the daily activity of approximately half of the over – 65 population, the remaining half is in generally good. Many of these people enjoy a full and active life. While their visual acuity, strength, and stamina have decreased from the peak years of early adulthood, they are able to maintain a daily regimen of exercise and activity. Furthermore, the elderly are actually les likely to suffer from short – term illness, such as colds and influenza, giving them even more freedom to enjoy their leisure time.

Can we predict which of the elderly will maintain good health and a positive outlook on life? This is a complicated problem with many unknowns. Genetic influences undoubtedly play a role. So too does life-style. There is growing evidence that people who work to maintain their physical and mental health throughout the early and middle adult years are likely to retain their good health and emotional well – being in old age. The adage “use it or lose it” seems to apply aptly to the process of healthy aging.

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Cognitive Development

What happens to the intellect in old age? Virtually everyone has an opinion. Many people, particularly the young, believe that older adults suffer some loss in their intellectual abilities. After all, the elderly appear to be physically less fit. Some are noticeably slower on motor tasks, such as driving a car or just walking down the street. Doesn’t it follow that the mind would be les nimble in old age?

Not really. As we have seem over and over again, the human intellect is very complex and defies any simple characterization. For example, the elderly do show some decline, particularly beyond the age of 70, on tasks that measure perceptual – motor speed and coordination. But this is only one way to gauge the strength of the intellect. Equally important are the verbal and reasoning skills that people acquire throughout life. Here the elderly are quite impressive. Assuming good health and freedom from debilitating illness, older adults retain their verbal and reasoning skills well into their eight decade.

Much of what we know about cognition in old age comes from an analysis of intelligence tests. Initially, psychologists used the cross – sectional method to measure changes in intelligence across the years. This involved administering intelligence tests to people of different ages at the same point in time. This method revealed a steady decline in intelligence from age 50 onward. The conclusion from such studies seemed obvious: mental abilities lessen as we grow older.

In science, however, everything depends on methodology. And in this case, the cross – sectional method is problematical. While it allows the investigator to compare different age groups, it overlooks the fact that people born many years apart have dramatically different life experiences. For example, if we compare a 20 – year – old

to an 80 – year – old, we are comparing people who grew up in two vastly different ears. The 20 – year – old has the benefit of educational and cultural opportunities that the 80 – year – old never dreamed of. If we then compare the two on an intelligence test, we must acknowledge that we are measuring more than a difference in age. In a very real sense, we are testing the effects of changes in education and cultural learning that have taken place over the past 60 years. It should come as no surprise if older subjects do not perform as well as younger subjects.

How, then, do we assess changes in intelligence across the years? The solution is to measure the same subjects over an extended period of time (the longitudinal method). Such a procedure allows the investigator to determine whether individuals actually decline in intelligence as they grow older. This is precisely what one group of investigators did when they began an intriguing study in the late 1950s. in actuality, this study compared two methods, by measuring the IQ scores of one group of subjects cross – sectionally, and the scores of another group longitudinally. The cross – sectional method produced the expected result. People showed a decline in IQ scores beginning at roughly age 50. however, as demonstrates, the longitudinal method yields a very different result. Results from the longitudinal method yields a very different result. Results from the longitudinal method indicated that people maintained their intellectual abilities well into their. The notion that people decline in intelligence as they grow older appears to be a myth born of a particular method.

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In short, the intellectual skills of the elderly typically do not diminish appreciably. Verbal skills, in particular, seem to hold well into the seventh decade. While some perceptual-motor abilities begin to decline after age 60, few people will even notice the slippage. Often it takes precise, laboratory testing to reveal these deficits. Moreover, older adults may well process an untapped form of intelligence – what one investigator called “wisdom.” A test of wisdom would measure judgment, expertise, and insight, and might well reveal an advantage for older adults. Perhaps we can be ‘young of mind” as well as young of heart.

Social and Personal Development

Life in the later years is often a favorite topic of conversation. A frequent question, not always expressed directly, is, what can the elderly do? Are older adults interested in an active social life? Do they continue to have sexual relations? What are their hobbies and special interests? All of these questions are genuine, of course, but they do reflect a particular viewpoint. Many of us have grown accustomed to thinking of old age as a period of gentle decline – a time when the elderly gradually lose interest in everyday activities. Research on old age, however, presents a different picture.

Life Satisfaction

If there is a generalization to be made about old age, it is contrary to what most people would predict. The later years often represent the peak of personal happiness. For example, recall the data on marital satisfaction which showed that couples are most content during old age. More direct evidence comes from surveys comparing personal happiness during different periods of lifespan. Investigators consistently find higher levels of happiness and contentment among the elderly than among adolescents and younger adults. Richard Kalish, an expert on late adult development, has suggested

that personal happiness may be high because old are brings many hidden advantages. Among these are an increase in leisure time, a reduction in many day – to – day responsibilities, and the ability to pay attention only to matters of high priority. This latter attitude may not be immediately obvious, but research has shown that older people respond to the reality of a finite future by ignoring many of the inconsequential detail of life. They focus their energy on matters of true importance.

It may seem surprising to speak of the advantages of old age, but only because all of us – psychologists and lay people alike – have implicitly accepted the notion that aging is burdensome. The early models of old age were strikingly negative. Experts tended to view old age as a time of loss- a period when health, awareness, intelligence, and vitality slowly ebbed away. But this notion of inevitable decline, known as the decrement model of old age, has not been confirmed in research with elderly. Psychologists have therefore substituted a personal – growth model which stresses the potential of the old – age period. The later years can be a time of great personal development, even in the face of debilitating losses, such as the death of a spouse or loved one. Or old age can be a time of loneliness and withdrawl from the outside world. The personal – growth model stresses the open – ended quality of old age.

In old age, the single greatest threat of personal happiness is ill health. While illness, particularly chronic illness, can occur at any point in the life span, it is amore acute

problem for the elderly. We noted earlier that a sizable percentage of older adults endure some limitation in daily activity due to physical problems. Because restrictions on what people can do often contribute of feelings of unhappiness, health becomes a particularly important predictor of personal development during old age.

Apart from health, what factors influence personal adjustment in old age? Research has shown that the elderly have a strong tendency to focus on their inner lives. In the process of reviewing life's accomplishments, some people accept their past as a worthy and meaningful experience. They view their life with pride and look forward with optimism to the future. A sense of a productive and fruitful life contributes to positive personal adjustment in old age.

The effective use of leisure time is also important. Most elderly people have retired from full – time employment. Beyond age 65 only 20 percent of the men and 6.5 percent of the women are likely to continue working. This increase in leisure time following retirement is one of the major benefits of old age. People are free to pursue favorite activities or to take up new interests. Recent data suggest that today the elderly are enjoying many different activities, including enrolling in college courses to study new subjects.

Family Life

The relationship between husband and wife is a vital dimension of family life in old age. Because children leave the household and friends either move away or die, the spouse often becomes the single greatest source of support and friendship. This does not mean, however, that those without a spouse inevitably experience loneliness. Roughly 5 percent of the population over age 65 has never married, but research has demonstrated that these people are not particularly lonely or unhappy. They have

apparently grown so accustomed to living on their own that old age poses no special problem. Furthermore, research has shown that a small but not significant number of people marry for the first time in old age. In one recent annual period, nearly 3000 elderly people began their first marriage.

A final dimension of family life in old age is the relationships the elderly have with their children and grandchildren. Approximately 80 percent of the elderly have children who are living, and some 75 percent have grandchildren. As we noted earlier, most children continue to maintain contact with their parents even after leaving. In general, the relationship between the elderly and their full – grown children is positive. Most children upon reaching adulthood provide emotional and, if needed, financial support for their elderly parents.

Elderly people enjoy the role of the grand-parenting, though perhaps not quite so much as we might think. The great majority of elderly couples enjoy visits with their grandchildren, but they want these contacts to be relatively brief. Extended time with grandchildren can be burdensome for many older couples. Furthermore, the age of the grandchild is an important element in the older person's enjoyment of the visit. Grandparents tend to enjoy younger children much more than older children or adolescents.

Challenges of Aging

The later years can be both rewarding and productive. But as the personal – growth model suggests, there are special challenges to happiness during old age. In this section, we examine three challenges that confront the elderly.

Health

We noted earlier that good health cannot be taken for granted in old age. The human body is remarkable for its adaptability and endurance, but it does show signs of weakening in old age. The elderly are more susceptible to serious bone fractures, such as a broken hip, and accidents caused by diminished eye sight, such as a stairway fall. Partial hearing loss and reduced stamina are also quite common in old age. Nevertheless, ill health is not the inevitable consequence of growing old. To the contrary, the elderly are quite capable of maintaining good health, and many do. On average, it is a greater challenge for older people to remain healthy, but one that many elderly meet. Less than 5 percent of the over – 65 population requires nursing home care, and among those who live to 65, life expectancy rises to nearly 80 for males and even longer for females. Good health in old age is a goal that can be achieved.

Demantia

A common worry for many people in our society is the fear of becoming a "burden" during old age. While some people fear a debilitating physical illness, others worry about "losing their mind." They fear that old age will bring an inevitable decline in mental abilities. In psychological terms, we would say they are concerned about demantia.

Demantia is a psychological disorder characterized by impairment of abstract thinking memory, and judgment (DSM – III – R). It may be accompanied by confusion and disorientation. While demantia can occur at any time in adulthood, it is most likely to appear after age 65. About 5 percent of the over – 65 population suffers

from some form of demantia.
For years, senility was the word used to describe the condition we now call demantia. But the term senility had unwanted consequences. It implied that as people grow older, they become forgetful, confused, and intellectually impaired as a matter of course. This is simply untrue. Demantia is not part of the normal aging process. It is the outcome of a variety of specific diseases that disturb brain chemistry. Chief among these is Alzheimer's disease, but on occasion chronic alcoholism and stokes can also causes demantia. Thus, demantia is not a naturally occurring process, but the result of an abnormal deterioration of the brain.
Alzheimer's disease is by far the most common cause of demantia, accounting for 50 to 70 percent of all cases. Alzheimer's disease is a progressive disorder that can begin as early as age 40, but typically does not appear before age 60. Although the course of the disease can vary from one person to another, it often begins with memory impairment, attentional problems, and deteriorating mathematical abilities. As the diseases progresses, there is an ever – widening loss of mental abilities. Alzheimer's

patients may have difficulty learning new skills or mastering tasks that require abstract reasoning. They often have difficulty finding the right word to express their thoughts. In the final stages of the disease, Alzheimer's patients may become confused and disoriented, show uncharacteristic bursts of anger, and suffer personality changes. Eventually, Alzheimer's victims are unable to meet their daily needs, and most die within 7 to 10 years of the onset of the disease.
If Alzheimer's disease, like other forms of demantia, is not inevitable, can we predict who will be afflicted? Unfortunately, we do not have a complete answer to the puzzle as yet. We know that Alzheimer's victims suffer from a particular form of brain disease, first identified by the German physician Alios Alzheimer in 1907. Typically, there is an unusual loss of cells in the frontal and temporal cortex and the hippocampus. Although no one is certain why these cells die, some researchers have suggested that a virus, like those that cause influenza or the measles, might live within the nervous system for long periods of time and then become activated by changes in the internal environment. Other researchers have suggested that the cell death is related to changes in specific brain neurotransmitters. One neurotransmitter that has been implicated in Alzheimer's disease is acetylcholine, found in large quantities in the cerebral cortex. Postmortem (after death) analysis of the brains of Alzheimer's patients has revealed significant decreases in this transmitter. Another theory suggests that Alzheimer's disease is related to toxins, such as aluminum, invading the brain. Still other theorists believe that the formation of abnormal protein in the brain is the cause of the disease.
Although there is as yet no cure for Alzheimer's disease, there are many programs to help victims and their families. Adults Day Health Centers are one example. These centers, which provide a place for Alzheimer's patients to go during the day, bring some relief to the family from the habitual care required by Alzheimer's patients. They also offer special programs for the patients. For example, patients who are in the early stages of Alzheimer's disease may benefit from memory retraining programs. These programs use mnemonic devices and other memory aids much like those

described in chapter 6. some centers offer programs in Reality Orientation. These programs help the more advanced Alzheimer's patient maintain an awareness of who they are and where they are. The centers also conduct support groups for the family. In these groups, family members meet to learn more about the disease and to share ideas on how best to care for the patient.

Death and Bereavement

Confronting our own death, and mourning the loss of loved ones, is part of life. It is not unique to the elderly. However, due largely to the progress of modern medicine, people are living longer and healthier lives. And while research has shown that people are vulnerable to death at certain periods of life, such as infancy and middle age, the greatest vulnerability occurs in old age.

The elderly seem to adjust to the prospect of their own death quite well. Interview studies have shown that although older people think about death more often than younger people, they have les fear of death. Apparently, people work through some of their fears of death as they age.

However, in old age many people must confront not only their own death but also the death of a spouse. In the United States, roughly 50 percent of the women 65 years and older are widows, while 15 percent of the men are widowers.

The experience of confronting one's own death is not as well understood. Elisabeth Kubler – Ross, a former psychiatrist at the University of Chicago, provided one description by interviewing hundreds of terminally ill. Although not all of these people were elderly, each knew of his or her impending death. Kubler – Ross observed five stages in the terminally ill patient's attitude toward death. The first stage is denial. The person wants to avoid what is happening. Anger follows denial, with questions such as, "Why is this happening to me?" as anger the resentment diminish, the bargaining stage emerges. The individual now accepts the reality of death but is anxious to have more time to enjoy life. Bargaining is followed by the fourth stage, depression, in which the individual feels a tremendous loss in the face of his or her impending death. It is a time of profound grief and sorrow. This grieving prepares the way for the final stage, acceptance, of death. The dying person achieves a "quiet victory" by facing death with neither happiness nor unhappiness. People recognize that their time "is very close now and it's all right".

It is important to understand both the strengths and limitations of Kubler – Ross' research, which had a major impact on health professionals who work with the terminally ill. Kubler – Ross managed to provide a supportive framework for understanding the highly charged emotions surrounding death. Nonetheless, psychologists have objected to the rather loss methodology that Kubler – Ross employed. She did not concern herself with the kind of systematic observation and statistical analysis that most researchers demand. Furthermore, Kubler – Ross' observations may apply only to those who face a prolonged illness. It is unlikely that they are a universal sequence that everyone experience. Indeed, other investigators find somewhat different stages, though a period of denial is apparently common to many who face death. It is clear, however, that psychologists still have much to learn about variations in the attitude and behavior of those who face the prospect of their

own death.